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American Foundryman

A PUBLICATION PRESENTING ASSOCIATION AND CHAPTER ACTIVITIES



An Example of Modern Foundry Lighting (See Page 3)

A.F.A. Committee Personnel Listed, See Page 8—Progress Report on High Temperature Properties of Sand, See Page 2—Invite Suggestions to Nominating Committee, See Page 3—Student and Apprentice Memberships Approved, See Page 4.

January
1940

Progress By Cooperation



The foundry industry has progressed, only as the foundrymen have exchanged ideas. When the casting of metals was an art and all its practices were jealously guarded secrets, progress was at a standstill. As soon as ideas were exchanged, the art was on the road to becoming a science with generally recognized rules and laws. The more freely ideas and experiences were exchanged, the more rapidly did the industry advance.

No one man could learn for himself all the secrets of casting metals. It was only by pooling the knowledge of many men, over a long period of time, that sufficient knowledge could be accumulated. From this pool can be drawn the facts necessary for the determination of the fundamental laws governing the behavior of cast metals. By carefully weighing and selection of the information available, a sound basis of facts can be constructed.

Our knowledge of the science of casting metals is unfortunately incomplete as yet. However, great progress has been made towards a complete knowledge of the subject in the past 20 years. If we wish to continue this progress it would seem that we would have to continue, or even expand, our program for the exchange of ideas. Theory and practice are both essential sources of ideas for this exchange. Probably the greatest necessity is for a closer cooperation between the men who secure ideas from theories and those who learn mostly from practice. Each group has a vital part in building up and weighing the stock of ideas.

The American Foundrymen's Association functions in two important ways to advance the knowledge of foundry practice. In the first place, it brings out the ideas and secondly, it disseminates these ideas widely.

In order to facilitate the work of the A.F.A., there are some things the members must do for themselves. They must be willing: (1) to undertake the labor and expense of research; (2) to make public the results of their work and experience; (3) to discuss constructively the results obtained by other workers.

Previous results have demonstrated that such a program will repay the entire industry for their efforts. In short, if you desire a greater amount of information on casting metals, it is necessary that you should contribute your share to the general knowledge. The advancement of the foundry industry depends on the work of all the individuals within the group.

A handwritten signature in cursive script that reads "W. H. Spencer".

W. H. Spencer, Chairman,
Gray Iron Division Committee on Fluidity Testing

W. H. Spencer is manager, foundry division, Wilkening Mfg. Co., Philadelphia, Pa., and is well known to the foundrymen of America for his many contributions to the literature on various phases of foundry practice through his activities in A.F.A. Mr. Spencer is an A.F.A. Committee worker of long standing and now, in addition to serving as Vice Chairman, Gray Iron Division, he is Chairman, Committee on Fluidity Testing. He also serves as A.F.A. representative on the International Committee on Testing Cast Iron and is a member of the following Gray Iron Division Committees: Committee on Classification of Graphite in Gray Cast Iron and Committee on Cooperation with Engineering Schools. He is a graduate of Vanderbilt University, Nashville, Tenn., and has had a wide experience in the foundry industry.

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+

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Room 1398, 222 West Adams St., Chicago, Ill.

*Members, Executive Committee.



American Foundryman

C O N T E N T S

January, 1940

Volume 2

Number 1

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Entered as second class matter July 22, 1938, at the post office at Chicago, Illinois, under the Act of March 3, 1879.

Progress Report on High Temperature Properties of Sand Available

IN 1936, the Steel Division of A.F.A. requested the A.F.A. Foundry Sand Research Committee to undertake an investigation of the high temperature properties of steel sands. Prior to that time, while a number of tests for sand at room temperature were available, tests for high temperature properties of sands were practically unknown. The investigation involved the evolution of testing technique, equipment to perform the tests, the tests themselves, and the interpretation of the data.

Following the design of proper equipment and the establishment of proper testing technique, various types of sand mixtures were studied to determine the high temperature properties. The results of these investigations have been published at the request of the Subcommittee of the Foundry Sand Research Committee, which directed the tests, as "Progress Report on Investigation of the Effect of High Temperatures on Steel Sands." Members will receive this report as part of the 1939 Transactions, but it is being made available as a reprint for immediate study. Copies of the report have been sent to contributors to the research fund. Other members may obtain copies of the reprint at \$.50 per copy and non-members at \$1.00 per copy.

In addition to a foreword outlining the birth of the investigation and an introduction by D. L. Parker, General Electric Co., Schenectady, N. Y., chairman, Subcommittee on Physical Properties of Foundry Sands at Elevated Temperatures of the Foundry Sand Research Committee, the pamphlet explains the sand mixtures used, preparation of test specimens, test procedure, equipment used, and shows charts of the data obtained on the various mixtures investigated under a number of conditions. As Mr. Parker states in his introduction, the report will be of as-

sistance to steel foundrymen in developing better methods of compounding sand mixtures to meet the actual conditions in the casting of molten metal.

Cast Metals Handbooks Are Being Mailed to Members

ABOUT December 1, all members of A.F.A. were notified that the 1940 edition of the Cast Metals Handbook was available and were requested to fill out the self-addressed, stamped card enclosed and return it to the National office together with their copies of the old 1935 edition. The return of the old volume was requested to keep obsolete information out of circulation.

Since the first copies of the 1940 Cast Metals Handbook were available, over 1,500 copies have been supplied to members at their request. Those who have received copies have expressed unanimous approval of the new edition.

So that they may have the latest information on cast metals, members who have not ordered copies of the new Handbook are requested to send their requests to the National office, 222 W. Adams St., Chicago, as soon as possible. One copy of the new Handbook is free to each member on request.

After members have received their copies, and had ample opportunity to peruse the contents carefully, they are invited to offer constructive criticisms for the improvement of the Handbook, especially from the standpoint of usefulness to engineers.

As the 1940 edition of the Cast Metals Handbook has been assembled primarily for the use of engineers, members are asked to assist the Association in placing this new edition in the hands of engineers so that they may be better informed than in the past as to the properties obtainable in cast metals.

Members desiring additional

The report should be of interest not only to steel foundrymen but also to those engaged in the production of castings from other types of metals. In steel foundry practice, the sand must withstand much abuse at high temperatures, since the pouring temperatures of steel generally exceed those of other metals.

copies of the 1940 edition of the Handbook may obtain them for \$3.00 per copy. Selling price of the Handbook to non-members is \$5.00.

Apprentice Contests Announced for 1940

FOLLOWING the plan of previous years, the A.F.A. Apprentice Committee has decided to sponsor contests in gray iron, steel and non-ferrous molding and pattern making for apprentices in 1940. Patterns and drawings for these four contests have been selected and any member desiring to stage a plant or group contest to select entries for the National convention is invited to register with the secretary of the Association. Three prizes in each of the four contests will be provided by the Board of Awards. Regulations governing the contests will be similar to those used last year, when over 140 foundries and pattern shops throughout the country had boys participating.

Any local group holding a competition is eligible to forward to the annual convention, Chicago, May 6-10, three entries in each competition, while an individual plant sponsoring a competition may submit one entry in each group.

The committee directing the national competition is as follows:

S. M. Brah, International Correspondence Schools, Chicago, Ill., *Chairman*.

J. G. Goldie, Cleveland Trade School, Cleveland, O.

AMERICAN FOUNDRYMAN

Frank Cech, Cleveland Trade School, Cleveland, O.

H. L. Charlson, American Steel Foundries, East Chicago, Ind.

B. B. Wittfoht, Caterpillar Tractor Co., Peoria, Ill.

J. Morgan Johnson, Tri-City Manufacturers' Association, Moline, Ill.

Suggestions to Nominating Committee Invited

THE meeting of the 1940 committee to nominate officers and directors has been set for January 31. Members are invited to present to this committee their suggestions for any of the positions to be filled, which are president, vice-president, each to serve one year, and five directors, each to serve three years.

The nominating committee consists of the last three presidents and four elected members. These are:

Past President J. L. Wick, Jr., Falcon Bronze Co., Youngstown, O., *Chairman*.

Past President H. Bornstein, Deere & Co., Moline, Ill.

Past President Marshall Post, Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.

Elected Members

R. F. Harrington, Hunt-Spiller Mfg. Corp., Boston, Mass.

Carl F. Joseph, Saginaw Malleable Iron Div., General Motors Corp., Saginaw, Mich.

W. H. Parker, American Steel Foundries, East Chicago, Ind.

J. W. Kelin, Federated Metals Div., American Smelting & Refining Co., St. Louis, Mo.

Alternates to Elected Members

B. D. Claffey, General Malleable Corp., Waukesha, Wis.

J. H. Lansing, Malleable Founders' Society, Cleveland, O.

E. Walcher, Ohio Steel Foundry Co., Lima, O.

Members of the Association should feel free to write to any of the nominating committee members proposing names of those they feel should be given consideration in selecting nominees. Some points which the committee would like to have

kept in mind in submitting names are:

(a) Record of the candidates' activities in Association affairs, such as committee service, chapter work, personality and presentation of papers.

(b) Representation of branches of the industry.

(c) Representation of geographical districts.

For the information of members offering suggestions, those officers and directors whose terms expire are:

President Henry S. Washburn, Plainville Casting Co., Plainville, Conn.

Vice-President L. N. Shannon, Stockham Pipe Fittings Co., Birmingham, Ala.

Directors: D. P. Forbes, Gunite Foundries Corp., Rockford, Ill. H. B. Hanley, American Laundry Machinery Co., Rochester, N. Y. C. J. P. Hoehn, Enterprise Foundry Co., San Francisco, Calif. Thomas Kaveny, Herman Pneumatic Machine Co., Pittsburgh, Pa. J. L. Wick, Jr., Falcon Bronze Co., Youngstown, O.

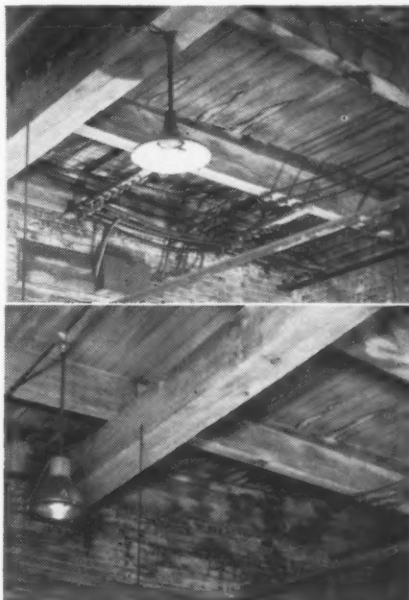
Front Cover

A SERIES of articles on "A Safety and Hygiene Program in a Small Foundry" appeared in the September, October and November issues of *American Foundryman*, which outlined the steps that had been taken by The Hamilton Foundry & Machine Company, Hamilton, Ohio, to institute and carry out such a program.

As a further indication that this program is functioning correctly, some time ago the employees' Committee on Safety and Hygiene recommended to the company that a new lighting system be installed in No. 3 Foundry. After considerable investigation, this recommendation was carried out and on Friday evening, October 27, 1939, the new lighting system was officially turned on by Thomas P. Kearns, superintendent, Division of Safety and Hygiene, Industrial Commission of Ohio. The front cover picture shows the foundry just after the new lighting system was turned on. In

the picture at the left, from left to right, are: Movie photographer; Charles Cooley, maintenance supervisor; Peter E. Rentschler, president, The Hamilton Foundry & Machine Co.; and Mr. Kearns.

According to available figures, with the old lighting system, the average illumination intensity at one foot from the foundry floor was 1.5 foot-candles and 2 to 3 foot-candles on the molding machine tables. The old type reflector, together with the wiring used in the old system, are shown at the top of the accompanying illustration. The old system consumed a total of 5,100 watts.



Top—Old Lighting and Wiring System.
Below—New Installation.

This system consisted of eighteen 150 watt lamps in shallow bowl porcelain enamel reflectors, seven 200 watt lamps in deep bowl porcelain enamel reflectors, and twenty 50 watt lamps in sockets or drop cords.

The new system, which gives an average illumination intensity of 8 to 10 foot-candles one foot from the floor and 10 to 12 foot-candles on the molding machine tables, consumes 21,110 watts and consists of the following: Forty-three 200 watt lamps in Holophane prismatic glass reflectors, thirty-seven 300 watt lamps in the same type reflectors, and seven 200 watt lamps in deep bowl porcelain enamel reflectors. The new type reflectors and

conduit used in the new lighting system are shown at the bottom in the accompanying illustration.

Both these pictures were taken in the same location, the latter after the old wiring and reflectors had been removed.

The opening of the new lighting system was attended by a large group of employees, officers of the company, supervisors and guests. Among the latter were Charles Barth, district

safety engineer, Division of Safety and Hygiene, Industrial Commission of Ohio; Arthur Strain, factory inspector, Department of Industrial Relations, State of Ohio; Robert Harmon, Hamilton, city fire inspector; and many visitors from other local plants.

In addition to talks by Messrs. Kearns and Rentschler, movies and entertainment were provided.

follows:

"The term apprentice shall be understood to mean a *certified* apprentice, *not more than 24 years of age*, employed by a plant which provides for a work schedule covering the all around practices of the trade of not less than three years' duration.

"Student designation is as follows: 'A bona fide student in a college or university, teaching engineering subjects, or a regularly enrolled student in full time classes in a technical or vocational high school.'

"Such members shall receive the *American Foundryman* and the regularly issued *Transactions*, but not the bound volume, such members to be allowed to purchase at members' rates copies of other publications.

"The cost of the membership to be \$4.00 per year, with no rebates to chapters."

Student and Apprentice Memberships Approved

THE Board of Directors, through its executive committee, has approved a special membership rate for students and apprentices. When the last change in the Association by-laws became effective, July 1, there was no provision for special members of the student classification. Therefore, the

Board of Directors had requested the Apprentice Training Committee to define apprentices and students and recommend conditions of membership to be made available.

The recommendations presented to the Board and approved at a meeting of the Executive Committee, November 10, read as

January Meeting Calendar

January 2
Metropolitan New York-New Jersey
Essex House, Newark, N. J.
SAM TOUR, Lucius Pitkin, Inc.
"Brass, Bronze and Aluminum Castings"

♦ ♦

January 8
Central Indiana
Hotel Washington, Indianapolis, Ind.
A. C. ROBSON, Continental Roll & Steel Foundry Co., East Chicago, Ind.
"Time Study and Job Evaluation"

♦

Chicago
Medinah Club
W. J. CAMERON, Ford Motor Co., Detroit

♦

Detroit
Fort Shelby Hotel
Joint Meeting with A. S. M. Chapter
R. H. MCCARROLL, Ford Motor Co.
"Cast Automotive Parts"

♦ ♦

January 9
Michiana
Hotel Oliver, South Bend, Ind.
W. A. HAMBLEY, Allis-Chalmers Mfg. Co.
"Cause and Cure of Scrap in Gray Iron"

♦

Northern Illinois-Southern Wisconsin
Faust Hotel, Rockford, Ill.
S. C. MASSARI, Assn. of Mfgs. of Chilled Car Wheels
"Automatic Cupola Operation by Means of Controlled Combustion"

Northeastern Ohio
Cleveland Club, Cleveland, Ohio.
Joint Meeting with Cleveland Engineering Society
F. J. STANLEY, Crucible Steel Casting Co.—"Steel"

♦

A. C. DENISON, Fulton Foundry & Machine Co.—"Gray Iron"

♦

J. H. LANSING, Malleable Founders' Society—"Malleable Iron"

♦

January 10
New England Foundrymen's Assn.
Annual Meeting and Election of Officers

♦

January 11
Southern California
Elks Club, Huntington Park, Calif.

♦

January 12
Buffalo
Annual Stag Nite
Buffalo Catering Co., 831 Washington St., Buffalo, N. Y.

♦

Central New York
Hotel Onondaga, Syracuse
F. G. SEFING, International Nickel Co.
"Metallurgy of Cast Iron—Foundry Factors"

♦

Metropolitan Philadelphia
Engineers Club
Film—"Steel—Man's Servant"

♦

Northern California
Alexander Hamilton Hotel, San Francisco
JOHN E. WILSON, Climax Molybdenum Co.
"Molybdenum in Cast Iron"

January 15
Quad City
LeClair Hotel, Moline, Ill.
J. A. RIDDERHOF, F. B. Stevens, Inc., Detroit
"Foundry Facings"

♦ ♦

January 19
Wisconsin
Hotel Schroeder, Milwaukee
COL. N. F. RAMSEY, Rock Island Arsenal
"Foundries' Place in National Defense Program"

♦ ♦

January 26
Ontario
H. MABSON, Industrial Accident Prevention Assn.
"House Cleaning"

♦

Regional Conferences
February 8-9
16th Annual Iron and Steel Conference
Del Monte, Calif.

♦ ♦

February 15-16
Wisconsin Regional Conference
Hotel Schroeder, Milwaukee

♦

February 22-24 (Tentative)
Birmingham Regional Conference

♦

March 22-23
New England Foundry Conference
Massachusetts Institute of Technology
Cambridge, Mass.

♦

April 12-13
Michigan State Foundry Conference
Michigan State College, East Lansing, Mich.

President Washburn to Visit Pacific Coast Chapters

PRESIDENT H. S. WASHBURN and Executive Vice President C. E. Hoyt are scheduled to meet with the members of the Pacific Coast Chapters in February, first at a regional foundry meeting, Del Monte, Calif., February 8-10, and later at meetings of the Southern and Northern California Chapters at Los Angeles and San Francisco. On their way west, Messrs. Washburn and Hoyt will stop off at Denver to attend a specially arranged meeting of Colorado foundrymen the evening of February 2, when Donald J. Reese, International Nickel Co., New York, will speak on cupola practice. Mr. Reese will then go west with the party speaking at some of the coast meetings.

The regional foundry conference at Del Monte is being sponsored by the Northern and Southern California Chapters and will be held in connection with the 16th Annual Conference of the Iron, Steel and Allied Industries of California. The tentative combined program for the allied industries conference and regional foundry meeting at Hotel Del Monte, February 8, 9 and 10, is as given below.

Sintering Test Information Wanted

By H. Ries,* Ithaca, N. Y.

SOME sand testing laboratories are reported to have had difficulty in making a satisfactory sintering test of sand, and in determining exactly when the sintering point is reached.

A sub-committee of the Sand Research Committee has been appointed to investigate the matter, and it is requested that any who are using this test advise us as to their exact method for making the test, and what difficulties, if any, they have had with it. This information should be sent to the Chairman of the Committee, C. M. Saeger, Jr., National Bureau of Standards, Washington, D. C.

*Technical Director, A. F. A. Foundry Sand Research Committee.

JANUARY, 1940

Tentative Program

Regional Conference, A.F.A. Northern and Southern California Chapters and Annual Iron, Steel and Allied Industries Conference

Del Monte, Calif.

Thursday—Feb. 8

9:30 A. M.—*Government Is Made for Man—Not Man for Government*

James F. Lincoln, president, Lincoln Electric Co., Cleveland, O.

The Outlook for the Steel Industry

Benjamin J. Fairless, president, U. S. Steel Corp., Pittsburgh, Pa.

Planning for Tomorrow

H. S. Washburn, president, Plainville Casting Co., Plainville, Conn., president, American Foundrymen's Association.

Meeting California Problems

James Mussatti, general manager, California State Chamber of Commerce.

2:00 P. M.—*Objectives of the American Foundrymen's Association*

Henry S. Washburn, president, Plainville Casting Co., Plainville, Conn., president, American Foundrymen's Association.

Hygiene in the Foundry

Donald E. Cummings, director, Division of Industrial Hygiene, University of Colorado, Boulder, Colo. (Director, field work of Saranac Laboratory on study of tuberculosis of Edward L. Trudeau Foundation.)

Cupola Operation

D. J. Reese, Development & Research Div., International Nickel Co., New York.

Non-Ferrous Operations—Speaker being selected.

7:00 P. M.—Informal Foundry Dinner Meeting.

9:00 P. M.—Motion Pictures on Foundry and Steel Industry.

Friday—Feb. 9

9:30 A. M.—*Relationship Existing Between Industry and the Government*

(Iron and Steel Clinic) W. C. Mullendore, Exec. Vice Pres., Southern California Edison Co., Ltd., Los Angeles; Vice President and Director of the Chamber of Commerce of the United States and Chairman, Industrial Committee, Director, California State Chamber of Commerce.

Industrial Cooperation with the United States Army to Build Up Our Own Defense

Col. W. Goff Caples, Corps of Engineers, Presidio, San Francisco, Calif.

2:00 P. M.—*Activities of the American Foundrymen's Association*

C. E. Hoyt, Exec. Vice Pres., American Foundrymen's Association, Chicago, Ill.

Use of Castings in Ship Construction

J. D. Fenstermacher, Columbia Steel Co., San Francisco, Calif.

Machining of Metals

J. P. Gill, president, Vanadium Alloy Steel Co., Latrobe, Pa., president, American Society for Metals.

Foundry Equipment—Speaker being selected.

2:00 P. M.—*Procedures Under the Wagner Labor Relations Act and Their Relationship to Industry*

(Iron and Steel Clinic) Paul Watkins, Lathem, Watkins & Bouchard, Los Angeles, Calif.

Changes in the Unemployment Insurance Act and the Effects on California Industry

Ansley K. Salz, A. K. Salz Co., San Francisco, Calif.

Decatur Casting Company Holds Open House

IN SPITE of the inclement weather, 2,236 people visited The Decatur Casting Co., Decatur, Ind., to attend its open house, Saturday, November 25. The morning session of the open house, from 9 to 11 o'clock, was a private session for employees and their families. Four hundred and thirty-four persons attended, an average of over four persons per employee of the company.

Each person was required to register, was given a program to cover the itinerary for inspection of plant production, and each employee, as well as each employee's family, was identified by a badge made especially for the occasion. Employees and their families were given free run of the plant so that each employee could show the members of his family where he worked.

Working exhibits consisted of molding souvenir cast iron rooster paper weights, which were significant of The Decatur Casting Company's slogan, "Something to Crow About—Decatur Quality Castings," core-blowing machines blowing automotive shock absorber piston cores, bench coremaker making motor bracket cores along with the actual operation of the new oil fired vertical continuous core oven. Another working exhibit

consisted of cleaning castings with metal abrasive.

There were displays of the equipment used in various departments, such as the typical molder's equipment consisting of patterns, working tools and safety protective equipment, display of raw materials used, typical coremakers' equipment consisting of coreboxes, vents, core plates, working tools and safety protective equipment, and display of tools and materials used in cleaning castings.

Particular interest was displayed by the families in the contents of the permanent display case of "Protective Safety and Health Devices Used in This Plant," which showed safety protective equipment provided by the company as well as examples of defective tools, equipment and safety protective devices that are unfit for use.

The various displays of steel-toed safety shoes throughout the plant were viewed with interest, particularly a shoe of one employee who avoided a crushed foot when a 350 pound motor block casting was dropped on the steel protective toe. The only damage done was to tear through the leather toe cap down to the steel with no injuries whatsoever to his foot.

Another particularly attractive exhibit was a life size model of a sandblaster, showing the safety protective equipment provided for the operator of this equipment.

Postal cards were available to visitors for mailing to their friends at no cost, as the company provided the postage. These cards showed an airplane view of The Decatur Casting Company and a view of the newly installed oil fired vertical continuous core oven. In the morning, the employees mailed 607 postal cards to their friends. A total of 3,671 cards were mailed to 21 states and two foreign countries.

During the morning session, the employees and their families enjoyed seeing a movie taken at Sunset Park, Decatur, Ind., at the Decatur Casting Company Employees' Family Picnic, July 15, 1939, and also movies of the fourth game of the 1939 World's Series championship baseball game between the Cincinnati Reds and New York Yankees. These World's Series movies were taken by Peter E. Rentschler.

Gorgeous floral displays of chrysanthemums and pompoms, in keeping with the fall festive occasion, were presented by local merchants.

Although it was expected there would be a period between the morning and afternoon sessions, the afternoon visitors began to arrive before the designated 12 o'clock, and many of the employees with their families stayed throughout the day. The afternoon session, supposedly from 12 to 3 o'clock, was for the invited guests who were friends of the employees, those to whom special invitations had been sent, friends of the company, including engineers, designers and buyers of iron castings, vendors and the general public. Beside many townspeople in attendance, there were many visitors from surrounding communities.

All of the supervisory force and office personnel of The Hamilton Foundry & Machine Co., Hamilton, Ohio, came by chartered motor bus.

AMERICAN FOUNDRYMAN

Scenes at the Decatur Casting Company Open House. Top Left—Guy Tester, Paymaster, Shows Resident Manager H. E. Bromer the Steel-toed Shoe That Prevented a Serious Foot Injury. Top Center—Great Interest Was Shown in the Hand Blasting Room and Protective Devices Used by the Operator. Top Right—Visitors Mailed Over 3,000 Cards to Friends and Relatives. Bottom Left—Officers of Decatur Casting Company. Left to Right—Henry A. Rentschler, Secretary-Treasurer; Peter E. Rentschler, Assistant Secretary-Assistant Treasurer; Don McDaniel, President. Bottom Right—E. Zimmerman, Squeezer Molder, Making Molds for Cast Iron Souvenir Paper Weights.



NEW MEMBERS

Company

Armour Institute of Technology Research Foundation, Chicago, Ill.
Central Pattern & Foundry Co., Chicago, Ill. (J. W. Huddleston, Treasurer.)
Cummins Engine Co., Columbus, Ind. (H. H. Lurie, Metallurgist.)

Personal

Lawrence J. Andres, Mgr., Gerlinger Brass & Aluminum Fdry. Co., West Allis, Wis.
William Becht, Foreman, Hoosier Iron Works, Kokomo, Ind.
Norman A. Birch, Met. Staff Asst., American Brake Shoe & Fdry. Co., Mahwah, N. J.
Jay Bromley, Foreman, Hoosier Iron Works, Kokomo, Ind.
A. S. Brown, Proprietor, Electrical Repair & Service Co., Birmingham, Ala.
John J. Bryant, George W. Bryant Co., McConnellsville, N. Y.
Glen Cunningham, Foreman, Hoosier Iron Works, Kokomo, Ind.
William D. Dunn, General Supt., Frazer & Jones Co., Solvay, N. Y.
R. B. Eyre, Chemist, American Sanitary Mfg. Co., Abingdon, Ill.
John M. Glass, Werner G. Smith Co., Indianapolis, Ind.
Horace A. Hunnicutt, Field Engineer, International Nickel Co., New York, N. Y.
Ivory Jarboe, Foundry Foreman, Rockwood Mfg. Co., Indianapolis, Ind.
Albert H. Lauer, Asst. Works Mgr., American Steel Foundries, Granite City, Ill.
P. H. Loveland, Supt., Griffin Wheel Co., Detroit, Mich.
John Martino, Chemist, Western Foundry Co., Chicago, Ill.
H. Kenneth McGrath, Asst. Fdry. Foreman, Alten's Foundry & Machine Wks., Lancaster, Ohio.

E. C. Meagher, Sales Rep., Chicago Retort & Fire Brick Co., Milwaukee, Wis.
Arno W. Mengel, Supervisor, International Harvester Co., Rock Island, Ill.
James B. Morey, Metallurgist, International Nickel Co., Inc., Los Angeles, Calif.
John A. Morrissey, Sales, Industrial Silica Corp., Buffalo, N. Y.
Allan S. Noyes, Treasurer, Hydro-Blast Corp., Chicago, Ill.
Emile F. Peschke, Molder, Reliance Regulator Corp., Alhambra, Calif.
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Armour Institute Research Foundation Builds Experimental Foundry

THE Research Foundation of Armour Institute of Technology, Chicago, has announced that the foundation for its experimental foundry, to be located at 34th and Federal Streets, Chicago, is completed and that construction of the new building is progressing.

The foundry is being built from funds made available by the Wetherill Research Fund, recently established by Colonel

S. P. Wetherill of Philadelphia. This fund was established especially for the purpose of studying counter-gravity die-casting methods for iron and other high melting point metals.

The new foundry will be equipped with all the necessary equipment for the production of castings and will provide complete research and testing facilities for iron and steel investigations. It will also provide a large scale pilot plant for the production of those materials.

The pressure die-casting of ferrous metals has until recently been thought impractical because

of the many problems involved, but preliminary investigation of this method whereby molten metal is forced through a refractory tube into a die or mold under air pressure, seems to indicate that a fine grained high strength product is possible with excellent surface qualities and narrow tolerance limits.

The Research Foundation of Armour Institute of Technology is affiliated with the Illinois Institute of Technology, recently formed by the merger of Armour Institute of Technology and Lewis Institute, both of Chicago.

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Natl. Bureau of Standards, Advisory Committee, Non-Ferrous Metals—Sam Tour
A.F.A. Foundry Refractories—A. E. Cartwright
American Institute of Physics on High Temperature Measurement and Control—Sam Tour
A.F.A. Committee on Fluidity Testing—G. P. Halliwell

*Ex-officio member of all committees.
**Ex-officio member of all committees.

*Committee members elected or appointed for the term indicated in listing.
**Ex-officio member of all committees.

A.F.A. Organization and Personnel*

Allan, James R., Assistant Mgr., Ind. Engrg. & Const. Div., International Harvester Co., 180 N. Michigan Ave., Chicago, Ill. (10, 10-b, 10-c, 22-b, 24-i, 30-j)

Amos, F. H., Engr., Ind. Engrg. & Const. Div., International Harvester Co., 180 N. Michigan Ave., Chicago, Ill. (10)

Anderson, C. S., Pres., Belle City Malleable Iron Co., Racine, Wis. (2, 52-a)

Anderson, R. J., Supt., Belle City Malleable Iron Co., Racine, Wis. (52-g)

Arbogast, A. C., Vice-Pres., Northern Indiana Brass Co., Elkhart, Ind. (6-a-1)

Armstrong, T. N., Met., International Nickel Co., 67 Wall St., New York City. (51-c)

Ash, E. J., Prof., University of Michigan, Ann Arbor, Mich. (52-g)

Avey, D. M., 2604 S. Trenton, Tulsa, Okla. (Board of Awards)

Bales, C. E., Vice-Pres., Ironton Firebrick Co., Ironton, O. (4-e)

Ball, W. M., Jr., Fdry. Supt., Edna Brass Mfg. Co., 528 Reading Rd., Cincinnati, O. (6-a-1)

Ballard, E. H., Gen. Fdry. & Patt. Shop Supt., General Electric Co., 920 Western Ave., West Lynn, Mass. (Advisory Board—Board of Awards, 10-b)

Bancroft, P. T., 2411 23rd Ave. B, Moline, Ill. (50-o)

Beach, E. W., Engrg. Executive, Campbell, Wyant & Cannon Foundry Co., Muskegon, Mich. (4-d)

Bechtner, Paul, Manager, American Colloid Co., 363 W. Superior St., Chicago, Ill. (6-b-1)

Belt, R. E., Secy-Treas., Malleable Founders' Society, 1800 Union Trust Bldg., Cleveland, O. (2)

Birkland, E. E., Factory Engrg. Dept., Crane Co., 4100 S. Kedzie Ave., Chicago, Ill. (10, 10-a, 10-b)

Blosjo, H. H., Met., Minneapolis Electric Steel Casting Co., 3800 N. E. 5th St., Minneapolis, Minn. (51-d, 51-o)

Boak, A. C., Met., Empire Brass Mfg. Co., Ltd., London, Ont., Canada (53-d)

Boegehold, A. L., Met., General Motors Research Lab., General Motors Bldg., Detroit, Mich. (50-a, 50-b, 50-t)

Bolton, J. W., Met., Lunkenheimer Co., Beekman & Waverly Aves., Cincinnati, O. (50-a, 50-g, 50-q, 51-o, 53-c, 53-c-2, 53-g)

Bornstein, H., Director, Testing & Research Lab., Deere & Co., Moline, Ill. (Board of Awards, Nominating Committee, 6-a-1, 49, 49-a, 50-a, 50-m, 50-s, 50-t)

Bouton, Eugene, Supv., Time Motion Study, J. I. Case Co., Racine, Wis. (4-c)

Bowers, J. A., Melting Supt., American Cast Iron Pipe Co., Birmingham, Ala. (4-e)

Boyles, Alfred, Met., Battelle Memorial Institute, 505 King Ave., Columbus, O. (50-g)

Brah, S. M., Ind. Coordinator, International Correspondence Schools, 360 N. Michigan Ave., Chicago, Ill. (3, 3-a, 3-d)

Bremer, E., Met. Editor, The Foundry, Penton Bldg., Cleveland, O. (50-a, 51-o)

Briggs, C. W., Tech. Adviser, Steel Founders' Society of America, 920 Midland Bldg., Cleveland, O. (6-b-7, 24-l, 50-d, 51-a, 51-e, 51-m)

Briggs, H. Kenneth, 4000 W. Washington Blvd., Chicago, Ill. (50-n, 50-t)

Brisbois, C. C., Fdry. Supt., Robert Mitchell Co., Ltd., 102 Monkland Blvd., St. Laurent, Que., Canada (50-r)

Brizzolara, R. D., Chief Engr., American Steel Foundries, 410 N. Michigan Ave., Chicago, Ill. (4-d)

Brooks, M. E., Met., Dow Chemical Co., Midland, Mich. (24-n, 53-c, 53-f, 53-h)

Bryant, R. E., Pres., Lockport Fittings Co., Inc., 71 Gooding St., Lockport, N. Y. (52-a)

Burlie, J. D., Fdry. Engr., Western Electric Co., Dept. 7713-f, Bldg. 54-1, Hawthorne Station, Chicago, Ill. (2, 53-c, 53-c-1)

Butler, Chas. O., Supt., Warren Pipe Co. of Mass., Inc., Everett, Mass. (50-o)

Butterworth, Ben., Gen. Mgr., Union Malleable Iron Co., E. Moline, Ill. (52-g)

Campion, E. W., Pres., The Bonney-Floyd Co., 611 Marion Rd., Columbus, O. (24-a, 51-a, 51-b, 51-k)

Carmody, E. J., Met., C. C. Kavin Co., 431 S. Dearborn St., Chicago, Ill. (4-e, 22-b)

Cartwright, A. E., Met., Robert Mitchell Co., Ltd., 102 Monkland Blvd., St. Laurent, Que., Canada (4-e, 53-h)

Casberg, C. H., Prof. of Mech. Engrg., University of Illinois, Urbana, Ill. (50-s)

Caudle, A. E., Sales Engr., Blower & Compressor Dept., Allis-Chalmers Mfg. Co., Milwaukee, Wis. (50-t)

Cech, Frank, Cleveland Trade School, Patt. Making Div., 535 Eagle Ave., Cleveland, O. (3, 3-a, 3-c, 4-g)

Charlson, H. L., Asst. Supt., American Steel Foundries, E. Chicago, Ind. (Address: 6341 Madison Ave., Hammond, Ind.) (3-a)

Claffey, B. D., Mgr., Gray Iron & Alum. Divs., General Malleable Co., Waukesha, Wis. (Nominating Committee)

*Membership on committees listed on preceding pages is shown by respective numbers and letters as given in parentheses.

Clamer, G. H., Pres., Ajax Metal Co., 46 Richmond St., Philadelphia, Pa. (Advisory Board, 24-g, 53-h)

Clark, R. A., Met., Lakey Foundry Co., Muskegon, Mich. (50-n)

Collier, R. L., Secy., Steel Founders' Society of America, 920 Midland Bldg., Cleveland, O. (2)

Cone, E. F., Editor, Metals & Alloys, 330 W. 42nd St., New York City (30-k, 30-p)

Conner, W. G., Jr., Gen. Foreman, Greensburg Works, Walworth Co., Greensburg, Pa. (4-b)

Corbett, W. J., Vice-Pres., Atlas Steel Casting Co., 1963 Elmwood Ave., Buffalo, N. Y. (2)

Crosby, V. A., Met. Engr., Climax Molybdenum Co., 14410 Woodrow Wilson Ave., Detroit, Mich. (50-a, 50-q, 50-t)

Culling, C. R., Vice-Pres., Carondelet Foundry Co., 2101 S. Kingshighway, St. Louis, Mo. (3, 3-b)

Curran, J. J., Res. Met., Walworth Co., Greensburg, Pa. (53-a, 53-c)

Curry, D. M., Met., Nickel-Non-Ferrous Alloys, International Nickel Co., 10-227 General Motors Bldg., Detroit, Mich. (53-a, 53-a-1, 53-g)

Daasch, H. L., Prof. and Head, Mech. Engrg. Dept., University of Vermont, Burlington, Vt. (6-a-1)

Davis, A. C., Prof., Dept. of Experimental Engrg., Cornell University, Ithaca, N. Y. (6-a-1, 6-b-7, 6-c-2)

Davis, Myron Park, Chief Chem. & Met., Otis Elevator Co., 44 Wells Ave., Yonkers, N. Y. (6-c-1)

Dayton, R. W., Met., Battelle Memorial Institute, 505 King Ave., Columbus, O. (53-g)

Deane, Horace, Asst. Works Mgr., Brake Shoe & Castings Div., American Brake Shoe & Foundry Co., Mahwah, N. J. (4, 6-a-1, 6-b-2, 50-n)

Deas, R. R., Jr., Asst. to Vice-Pres., American Cast Iron Pipe Co., Birmingham, Ala. (50-f, 50-s)

DeBruyne, P. C., Supt., Moline Malleable Iron Co., St. Charles, Ill. (52-a)

Delport, Vincent, Caxton House, Westminster, London, S. W. 1, England (Temporary address: Penton Publishing Co., 7, Kenton Gardens, Kenton, near Harrow, Middlesex, England) (1, 1-a)

Demmler, A. W., Met. Engr., Vanadium Corp. of America, P. O. Box 566, Bridgeville, Pa. (51-g)

Diedrich, J. H., Mgr., Blackhawk Fdry. & Machine Co., 323 Clark St., Davenport, Ia. (53-a)

Dierker, A. H., Res. Engr., Engrg. Experiment Station, Ohio State University, Columbus, O. (4-e)

Dietert, H. W., Pres., Harry W. Dietert Co., 9330 Roselawn Ave., Detroit, Mich. (6-a, 6-b-2, 6-b-3, 6-b-4, 6-b-5, 6-b-7, 6-c-1, 6-c-2)

Dobson, D. I., Met., General Malleable Corp., Waukesha, Wis. (52-g)

Donnocker, H. E., Ottawa Silica Co., Ottawa, Ill. (6-a-1)

Donoho, C. K., Met., American Cast Iron Pipe Co., Birmingham, Ala. (50-d)

Dunbeck, N. J., Vice-Pres., Eastern Clay Products Co., Eifort, O. (6-a, 6-b-1, 6-b-3)

Dwyer, Pat., Engrg. Editor, The Foundry, Penton Bldg., Cleveland, O. (50-r)

Eggleston, G. K., Met., Detroit Lubricator Co., 5900 Trumbull Ave., Detroit, Mich. (6-a, 6-b-4, 53-c, 53-c-1, 53-f)

Elam, F. H., Mgr., Casualty Dept., American Steel Foundries, 410 N. Michigan Ave., Chicago, Ill. (30-c, 30-d, 30-i)

Erler, Johannes, Met., Farrel-Birmingham Co., Ansonia, Conn. (50-a, 51-o)

Evans, George S., Met., Mathieson Alkali Works, Inc., 60 E. 42nd St., New York City (50-t)

Everett, L. E., Fdry. Supt., Key Co., E. St. Louis, Ill. (51-o)

Farrel, Franklin, III, Fdry. Mgr., Farrel-Birmingham Co., Ansonia, Conn. (3, 3-b)

Finster, Werner, Met., Reading Steel Casting Div., American Chain & Cable Co., Inc., Reading, Pa. (6-a, 6-b-7, 51-d, 51-f)

Forbes, A. D., Asst. Supt., Gunite Foundries Corp. (Address: 633 N. Main St.), Rockford, Ill. (6-a-1, 52-g)

Forbes, D. P., Pres., Gunite Foundries Corp., 302 Peoples Ave., Rockford, Ill. (4, 6-a-1, 52-a)

Frank, R. H., Chief Met., The Bonney-Floyd Co., Columbus, O. (51-e)

Freund, C. J., Dean, College of Engrg., University of Detroit, Detroit, Mich. (3, 3-b)

Fuerst, P. Chas., Inspector, Falk Corp., Milwaukee, Wis. (1-b)

Fuller, B. D., Sales Rep., Whitehead Bros. Co. (Address: 1228 Edward St., Lakewood, O.) (Advisory Board)

Fulton, A. M., Supt., Northern Malleable Iron Co., 867 Forest St., St. Paul, Minn. (52-a, 52-g, 52-h)

Gardner, H. B., Chem. Met., Bureau of Standards, Washington, D. C. (53-e)

George, W. B., Met. & Fdry. Engr., R. Lavin & Sons, Inc., 3426 S. Kedzie Ave., Chicago, Ill. (53-c)

George, W. E., Asst. to Management, Campbell, Wyant & Cannon Foundry Co., Muskegon, Mich. (4-b)

Gezelius, R. A., Met. Eng., General Steel Castings Corp., Eddystone, Pa. (6-b-3, 51-a, 51-d, 51-f)

Goldie, J. G., Fdry. Instr., Cleveland Trade School, 535 Eagle Ave., Cleveland, O. (3, 3-a, 3-d)

Goss, J. E., Apprentice Supv., Grown & Sharpe Mfg. Co., Providence, R. I. (3, 3-b)

Graham, W. A., Met. Eng., Non-Ferrous Fdries., Westinghouse Electric & Mfg. Co., E. Pittsburgh, Pa. (1-b)

Gregg, A. W., Fdry. Engr., Fdry. Equip. Div., Whiting Corp., Harvey, Ill. (4, 50-t, 51-a)

Grennan, John, Instr., Fdry. Practice, Dept. of Metal Processing, University of Michigan, Ann Arbor, Mich. (3, 3-d, 6-c-2, 50-o, 50-r, 50-s)

Griest, E. E., Vice-Pres. & Gen. Mgr., Lehigh Foundries, Inc., Easton, Pa. (52-a)

Griggs, H. C., Met., Waterbury-Farrel Fdry. & Machine Co., P. O. Box 70, Waterbury, Conn. (50-a)

Grim, R. E., Petrographer, Illinois State Geological Survey, 305 Ceramics Bldg., Urbana, Ill. (6-b-1)

Grotts, Fred., Pres., Ft. Pitt Steel Castings Co., McKeesport, Pa. (51-a)

Guion, C. P., Fdry. Equip. Engr., 3843 N. Central Park Ave., Chicago, Ill. (10)

Hall, John Howe, 228 W. Willow Grove Ave., Chestnut Hill, Philadelphia, Pa. (241, 49, 51, 51-a, 51-m, 51-p)

Halliwell, G. P., Dir. of Res., H. Kramer & Co., 1347 W. 21st St., Chicago, Ill. (50-d, 53-c, 53-h)

Hambley, W. A., Fdry. Met., Allis-Chalmers Mfg. Co. (Address: 1170 N. 43rd St.), Milwaukee, Wis. (1-b)

Hamblin, K. H., Supt., The Palmyra Foundry Co., Palmyra, N. J. (52-b, 52-g)

Hamilton, John W., Met., Frigidaire Div., General Motors Corp., 300 Taylor St., Dayton, O. (50-g)

Hamilton, W. C., Res. Dir., American Steel Foundries, E. Chicago, Ind. (6-b-7, 51-e)

Hammond, T. S., Pres., Whiting Corp., Harvey, Ill. (Board of Awards)

Hanley, H. B., Fdry. Mgr., American Laundry Machinery Co., 50 Sherer St., Rochester, N. Y. (6-a-1)

Hansen, S. B., Ind. Engrg. & Const. Dept., International Harvester Co., 130 N. Michigan Ave., Chicago, Ill. (30-f)

Harrell, R. C., Prod. Control Supt., Stockham Pipe Fittings Co., Birmingham, Ala. (4-c)

Harrington, R. F., Fdry. Supt. & Chief Met., Hunt-Spiller Mfg. Corp., 383 Dorchester Ave., Boston, Mass. (Nominating Committee—50-a)

Harris, W. C., Met., Birdsboro Steel Fdry. & Machine Co., Birdsboro, Pa. (51-g)

Hartmann, Wm. C. Met. Supv., Bethlehem Steel Co., Bethlehem, Pa. (51-f, 51-o)

Healey, M. V., Casting Met., General Electric Co., 1 River Rd., Schenectady, N. Y. (51-g, 53-b)

Heaslett, R. C., Gen. Met., Continental Roll & Steel Fdry. Co., Grant Bldg., Pittsburgh, Pa. (51-g)

Hess, E. F., Ohio Injector Co., Wadsworth, O. (53-c, 53-c-2)

Hindle, N. F., American Foundrymen's Association, 222 W. Adams St., Chicago, Ill. (6, 6-a, 53-a)

Hine, R. F., Fdry. Met., Studebaker Corp., South Bend, Ind., (50-o)

Hoehn, C. J. P., Pres., Enterprise Foundry Co., 2902—19th St., San Francisco, Calif. (30-b)

Hopkins, D. P., Vice Pres., U. S. Pipe & Foundry Co., Burlington, N. J. (22-d, 24-c, 30-a, 50-b, 50-i)

Hunter, F. W., Fdry. Supt., Sargent & Co. (Address: 40 Elm, East Haven, Conn.) (3)

Hydar, V. J., Sr. Field Rep., Federal Committee on Apprenticeship, 2470 N. 91st, Milwaukee, Wis. (3)

Jameson, A. H., Mgr. of Casting Sales, Malleable Iron Fittings Co., Branford, Conn. (51-p)

Jennings, E. G., Met., Canadian Bronze Co., 999 Delorimier Ave., Montreal, Que., Canada. (53-c, 53-f)

Jennings, W. R., Fdry. Supt., John Deere Tractor Co., Waterloo, Ia. (4-d)

Job, Robert, Vice Pres., Milton Hersey Co., Ltd., 980 St. Antoine St., Montreal, Que., Canada. (50-a)

Johnson, J. Morgan, Vocational Supv., Tri-City Manufacturers' Association, Moline, Ill. (3, 3-a, 3-d)

Johnston, T. G., Met. Engr., Pig Iron Div., Republic Steel Corp., Republic Bldg., Cleveland, O. (50-t)

Jones, E. O., American Foundrymen's Association, 222 W. Adams St., Chicago, Ill. (10-10-b)

Joseph, Carl F., Met., Saginaw Malleable Iron Co., Saginaw, Mich. (Nominating Committee, 50-d, 52-a, 52-g)

Judson, H. H., Fdry. Supt., Goulds Pumps, Inc., Seneca Falls, N. Y. (50-s)

Kauffman, J. H., Tech. Asst., Ohio Brass Co., Mansfield, O. (53-c)

Kayser, J. A., Secy., Laclede-Christy Clay Products Co., 1711 Ambassador Bldg., St. Louis, Mo. (22-b)

Kelin, John W., Asst. Sales Mgr., Federated Metals Div., American Smelting & Refining Co., 4041 Park Ave., St. Louis, Mo. (Nominating Committee, 53-d, 53-f)

Kemp, J. E., Supv. of Training, Walworth Co., 3rd & Elm Sts., Kewanee, Ill. (3-c)

Kempf, L. W., Met., Aluminum Res. Labs., Aluminum Co. of America, 2210 Harvard Ave., Cleveland, O. (53-b)

Kennedy, R. E., American Foundrymen's Association, 222 W. Adams St., Chicago, Ill. (22-b)

Knight, L. B., Jr., Vice Pres. in Charge of Sales, National Engineering Co., 549 W. Washington Blvd., Chicago, Ill. (6-a-1)

Kuniansky, Max, General Mgr., Lynchburg Foundry Co., 3817 Nicholas St., Lynchburg, Va. (50-a, 50-b, 50-d)

Kyle, P. E., Asst. Prof. of Mech. Engrg., Mass. Institute of Technology, Cambridge, Mass. (50-s)

Laird, Wm. J., Met., Westinghouse Electric & Mfg. Co., E. Pittsburgh, Pa. (53, 53-a)

Lanahan, Frank J., Pres., Ft. Pitt Malleable Iron Co., P. O. Box 505, Pittsburgh, Pa. (Board of Awards)

Lancashire, Ernest, Chief Chem., Detroit Steel Casting Co., 4069 Michigan St., Detroit, Mich. (51-c)

Landgraf, G. F., Lebanon Steel Foundry, Lebanon, Pa. (51-e)

Lansing, J. H., Shop Prac. Engr., Malleable Founders' Society, Union Commerce Bldg., Cleveland, O. (Nominating Committee, 52-a, 52-g)

Larsson, Carl F., American Air Filter Co., Inc., 20 N. Wacker Dr., Chicago, Ill. (10)

Lawson, C. C., Supt., Wagner Malleable Iron Co., 1275 E. Sangamon St., Decatur, Ill. (52-g)

Lee, R. L., Secy.-Treas., Liberty Foundry, Inc., Wauwatosa, Wis. (2)

Leroux, Geo. J., Asst. Mgr., National Malleable & Steel Castings Co., 10600 Quincy Ave., Cleveland, O. (4-b)

Lesser, Nathan, Deere & Co., Moline, Ill. (10)

Leun, A. V., Refractories Engr., Bethlehem Steel Co., Bethlehem, Pa. (4-e)

Lillieqvist, G. A., Res. Met., American Steel Foundries, E. Chicago, Ind. (51-g, 51-o, 51-p)

Liskow, J. G., Chief Engr., C. B. Schneible Co., 3951 Lawrence Ave., Chicago, Ill. (10)

Lorig, C. H., Met., Battelle Memorial Institute, 505 King Ave., Columbus, O. (49-a, 50-a, 51-a)

Lowe, John, Fdry. Supt., Vilter Mfg. Co., 2217 S. 1st, Milwaukee, Wis. (4-e, 50-t)

Lynch A. D., Ind. Relations Mgr., J. I. Case Co., Racine, Wis. (4-b)

Maack, H. W., Chief Chem. & Met., Crane Co., 4100 S. Kedzie Ave., Chicago, Ill. (52-a)

MacKenzie, James T., Met., American Cast Iron Pipe Co., Birmingham, Ala. (22-a, 24-j, 24-o, 49-a, 50-a, 50-b, 50-k, 50-l, 50-m, 50-q, 50-s, 50-t)

Mahin, W. E., Met. Engr., Feeder Engrg. Dept., Westinghouse Electric & Mfg. Co., E. Pittsburgh, Pa. (50-a, 50-g)

Mason, Howard, Gould Coupler Co., Depew, N. Y. (6-b-7)

Massari, S. C., Res. Met., Association of Mfrs. of Chilled Car Wheels, 445 N. Sacramento Blvd., Chicago, Ill. (50-s, 50-t)

Mathiesen, C., Prod. Mgr., Whitehead Bros. Co., P. O. Box 864, Albany, N. Y. (6-a, 6-b-4)

McCandlish, R. W., Research Corp., 59 E. Van Buren St., Chicago, Ill. (10)

McDougall, A. H., Vice Pres., Whiting Corp., Harvey, Ill. (30-g)

McElwee, R. G., Fdry. Engr., Vanadium Corp. of America, 2440 Book Bldg., Detroit, Mich. (50-a, 50-n, 50-t)

McKinney, P. E., Met. Engr., Bethlehem Steel Co., Bethlehem, Pa. (50-a, 51-a, 51-e, 51-g, 51-n)

McMahon, W. O., P. O. Box 364, Birmingham, Ala. (50-t)

McMillan, W. D., Met., International Harvester Co., Blue Island & Western Ave., Chicago, Ill. (52-g)

McMullan, S., Western Electric Co., Cicero, Ill. (10, 10-a, 10-b)

McNulty, J. E., Foreman, McKinnon Industries, St. Catharines, Ont., Canada (53-b)

Melmoth, F. A., Vice Pres., Detroit Steel Casting Co., 4069 Michigan St., Detroit, Mich. (49-a, 51-a, 51-c)

Metzger, E. J., Gen. Supt., Falcon Bronze Co., 218 S. Phelps St., Youngstown, O. (2, 4-c, 53-h)

Milligan, M., Lunkenheimer Co., Beekman & Waverly Aves., Cincinnati, O. (50-a, 51-o)

Minert, G. K., Asst. Met., Gunite Foundries Corp., Rockford, Ill. (4-e)

Minich, V. E., Pres., American Foundry Equipment Co., 52 Vanderbilt Ave., New York City. (1)

Montgomery, H., Lunkenheimer Co., Beekman & Waverly Aves., Cincinnati, O. (53-c, 53-c, 2, 53-g)

Mooney, R. H., Chief Plant Engr., Saginaw Malleable Iron Div., General Motors Corp., Saginaw, Mich. (6-a, 1)

Moore, R. E., Vice Pres. & Treas., Flockhart Foundry Co., 83 Polk St., Newark, N. J. (30-b)

Moore, R. S., Sales Engr., Harbison-Walker Refractories Co., Farmers Bank Bldg., Pittsburgh, Pa. (50-t)

Mount, O. E., Treas., American Steel Foundries, 410 N. Michigan Ave., Chicago, Ill. (30-j)

Mulcahy, B. P., Research Engr., Citizens' Gas & Coke Utility, 47 S. Pennsylvania St., Indianapolis, Ind. (50-t)

Munson, R. S., Vice Pres., Atlantic Steel Casting Co., 6th & Lloyd Sts., Chester, Pa. (51-p)

Nass, C. V., Asst. Supt. of Fdries., Fairbanks Morse & Co., Beloit, Wis. (6-a, 53-a, 53-d)

Nus, F. C., Fdry. Prod. Supt., John Deere Tractor Co., Waterloo, Ia. (1-b)

O'Brien, B. C., Vice-Pres., Roots-Connersville Blower Co., Connersville, Ind. (50-t)

O'Connor, D. Frank, Brass Fdry. Foreman, Walworth Co., S. Boston, Mass. (4-f)

Ogden, R. L., Supt. of Fdries, Stockham Pipe Fittings Co., Birmingham, Ala. (52-b)

Ondreyco, A. M., Chief Met., Meehanite Metal Co., 311 Ross St., Pittsburgh, Pa. (50-a)

Overstreet, F. L., Illinois Clay Products Co., 2401 12th Ave., Moline, Ill. (6-b-1)

Page, E. W., Mgr., General Electric X-Ray Corp., 2012 W. Jackson Blvd., Chicago, Ill. (51-e)

Parker, D. L., Fdry. Research & Test Div., General Electric Co., 920 Western Ave., West Lynn, Mass. (6-a, 6-b-7, 51-a, 51-h)

Parker, W. H., American Steel Foundries, E. Chicago, Ind. (Nominating Committee)

Parsons, R. W., Met., Ohio Brass Co., Mansfield, O. (53-a, 53-b)

Patch, N. K. B., Secy., Lumen Bearing Co., 197 Lathrop St., Buffalo, N. Y. (30-h)

Peregoy, L. S., President, Sivy Steel Casting Co., Milwaukee, Wis. (10-b)

Phillips, G. P., Met., Tractor Works, International Harvester Co., 2600 W. 31st St., Chicago, Ill. (4, 24-b, 49, 50, 50-a, 50-c, 50-g, 50-n, 50-q, 50-t)

Phillips, H. D., Prod. Engr., Lebanon Steel Foundry, Lebanon, Pa. (6-b-7, 51-a, 51-c, 51-f)

Phillips, W. J., Asst. Supt., Steel Fdry., Malleable Iron Fittings Co., Goodsell Rd., Branford, Conn. (51-c, 51-f)

Post, Marshall, Vice Pres. & Works Mgr., Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa. (Board of Awards, Nominating Committee, 1)

Prendergast, James, Mgr., Fdry. Div., Sullivan Machinery Co., Claremont, N. H. (30-e)

Priestley, K. H., Met., Eaton-Erb Foundry Div., Eaton Mfg. Co., Vassar, Mich. (50-o)

Randall, C. P., Asst. Chem., Hunt-Spiller Mfg. Co., 383 Dorchester Ave., Boston, Mass. (6-a, 6-b-2, 6-b-7, 6-c-1, 6-c-3)

Rayner, Harry, Foundry Met., Dodge Bros. Corp., 7900 Jos. Campau, Detroit, Mich. (50-n)

Reed, H. B., Met., Westinghouse Air Brake Co., Wilmerding, Pa. (53-e)

Reeder, D. B., Met., Electro Metallurgical Co., Rm. 1600, 230 N. Michigan Ave., Chicago, Ill. (50-t)

Reese, D. J., Met., International Nickel Co., 67 Wall St., New York City. (50-t)

Rentschler, P. E., Pres., Hamilton Foundry & Machine Co., Hamilton, O. (2)

Reichert, W. G., Fdry. Met., American Brake Shoe & Foundry Co., Mahwah, N. J. (6-a, 6-b-4, 6-b-5, 6-b-7, 6-c-1, 6-c-3)

Reid, Vaughan, Pres., City Pattern Works, 1161 Harper Ave., Detroit, Mich. (4-g)

Ries, H., 401 Thurston Ave., Ithaca, N. Y. (6, 6-a, 6-c-1, 6-c-3, 30-n)

Roast, Harold J., Vice Pres., Canadian Bronze Co., Ltd., 999 Delorimer Ave., Montreal, Que., Canada. (49, 53, 53-a, 53-a-1)

Roberts, C. S., Vice Pres., Dodge Steel Co., 6501 Tacony St., Philadelphia, Pa. (2)

Robson, H. C., Ind. Engr., Continental Roll & Steel Foundry Co., E. Chicago, Ind. (4-c)

Roeming, E. H., Gray Iron Fdry. Accountant, Gray Iron Castings Div., Chain Belt Co., 1600 W. Bruce St., Milwaukee, Wis. (2)

Romanoff, W. H., Tech. Supt., H. Kramer & Co., 2119 S. Loomis St., Chicago, Ill. (4, 53-b, 53-g)

Root, A. B., Jr., Asst. Gen. Mgr., Hunt-Spiller Mfg. Corp., 383 Dorchester Ave., Boston, Mass. (10-b)

Rosenthal, P. C., Instr. of Met., Dept. of Mining & Met., University of Wisconsin, Madison, Wis. (50-g)

Rother, W. H., Met., Buffalo Foundry & Machine Co., 1543 Fillmore Ave., Buffalo, N. Y. (50-a)

Rowe, H. J., Aluminum Co. of America, 2210 Harvard Ave., Cleveland, O. (53-c)

Ruten, W. H., Instr. in Practical Mech., University of Nebraska, Lincoln, Nebr. (3-c)

Saeger, C. M., Jr., Physicist, National Bureau of Standards, Washington, D. C. (6-a, 6-b-4, 6-b-5, 6-b-8, 50-a, 50-d, 53-h)

St. John, H. M., Brass Fdry. Supt., Crane Co., 4100 S. Kedzie Ave., Chicago, Ill. (49-a, 53-a, 53-g, 53-h)

Sampson, J. M., Foundry Engr., General Electric Co., 1 River Rd., Schenectady, N. Y. (51-f)

Saunders, W. M., Fdry. Consultant, 184 Whittier Ave., Providence, R. I. (6-a-1)

Schubert, C. E., Asst. Prof. of Mech. Engrg., University of Illinois, Urbana, Ill. (6-b-3)

Schumacher, G. A., Met., Albion Malleable Iron Co., 505 Irwin Ave., Albion, Mich. (6-b-3, 52-g)

Schwartz, H. A., Mgr. of Research, National Malleable & Steel Castings Co., 10600 Quincy Ave., Cleveland, O. (1, 24-f, 24-m, 52-a, 52-b, 52-e, 52-f)

Sefing, F. G., Res. Met., International Nickel Co., 67 Wall St., New York City (50-s)

Shannon, L. N., Vice Pres., Stockham Pipe Fittings Co., Birmingham, Ala. (Vice President, Executive Committee, 49, 52-a)

Sherwin, L. M., Div. Supt., Fdry. & Patt. Shop. Div., Brown & Sharpe Mfg. Co., Providence, R. I. (30-q)

Sims, C. E., Supt. Met., Battelle Memorial Institute, 505 King Ave., Columbus, O. (51-a, 51-c, 51-i)

Smith, A. J., Lunkenheimer Co., Beekman & Waverly Aves., Cincinnati, O. (50-g, 50-q)

Smith, E. B., Vice Pres., American Brake Shoe & Foundry Co., 230 Park Ave., New York City (30-b)

Smith, E. K., Met., Electro Metallurgical Co., 1210 Ford Bldg., Detroit, Mich. (50-a, 50-q, 50-t, 52-a)

Smith, H. L., Chief Met., American Smelting & Refining Corp., Pittsburgh, Pa. (53-a, 53-e)

Spencer, W. H., Mgr., Fdry. Div., Wilkening Mfg. Co., 2000 S. 71st St., Philadelphia, Pa. (22-c, 50, 50-a, 50-d, 50-g, 50-h, 50-s)

Steinebach, F. G., Editor, The Foundry, Penton Bldg., Cleveland, O. (1, 50s)

Stettbacher, Wayne, Dir. of Apprentice Training, Employers' Association of Detroit, 2309 Book Tower, Detroit, Mich. (3, 3-c)

Stoll, G. E., Chief Met., Bendix Products Corp., South Bend, Ind. (1-b)

Stone, Bert, Sand Chemist, Belle City Malleable Iron Co., Racine, Wis. (6-a)

Storie, D. M., Supt., Fittings, Ltd., Oshawa, Ont., Canada (52-a)

Strauss, Jerome, Vice-Pres., Vanadium Corp. of America, 420 Lexington Ave., New York City (53-e)

Stuart, H. W., U. S. Pipe & Foundry Co., Burlington, N. J. (24-c, 50-b, 50-i)

Sugar, Alfred, Met., Monarch Aluminum Mfg. Co., 9301 Detroit Ave., Cleveland, O. (24-n, 53-h)

Sutherland, F. S., Met., Continental Roll & Steel Foundry Co., E. Chicago, Ind. (51-f)

Taylor, H. F., Met., Naval Research Laboratory, Anacostia Station, Washington, D. C. (51-g)

Teetor, R. J., Pres., Cadillac Malleable Iron Co., Cadillac, Mich. (52-a)

Thieme, C. O., Works Mgr. & Chief Met., H. Kramer & Co., 1359 W. 21st St., Chicago, Ill. (53-a, 53-d)

Thomson, James, Chief Plant Engr., Continental Roll & Steel Foundry Co., E. Chicago, Ind. (4-d)

Tobin, John F., Sales Engr., American Blower Corp., 228 N. La Salle St., Chicago, Ill. (10)

Touceda, E., Consulting Engr., 943 Broadway, Albany, N. Y. (24-e, 52-d)

Tour, Sam, Vice-Pres., Lucius Pitkin, Inc., 47 Fulton St., New York City (53-f, 53-h)

Vanick, J. S., Met., International Nickel Co., 67 Wall St., New York City (50-a)

Van Kooy, J. R., Instr. in Patternmaking, Milwaukee Vocational School, Milwaukee, Wis. (3-c)

Vial, F. K., Vice-Pres., Griffin Wheel Co., 445 N. Sacramento Blvd., Chicago, Ill. (24-d, 50-j)

Wagner, John A., Pres., Wagner Malleable Iron Co., Decatur, Ill. (2)

Walcher, E., Ohio Steel Foundry Co., Lima, O. (Nominating Committee)

Walker, Stanton, Consulting Engr., National Industrial Sand Assn., Munsey Bldg., Washington, D. C. (6-a-1)

Walls, F. J., Met., International Nickel Co., 10-227 General Motors Bldg., Detroit, Mich. (50-a, 50-f, 50-n, 50-q)

Wartgow, F. E., Time Motion Study Engr., American Steel Foundries, E. Chicago, Ind. (4-c)

Washburn, H. S., Pres., Plainville Casting Co., Plainville, Conn. (President)

Watts, T. C., Falcon Bronze Co., 218 S. Phelps St., Youngstown, O. (53-a, 53-b)

Weaver, F. L., Met., Great Lakes Foundry Sand Co., United Artists Bldg., Detroit, Mich. (6-a-1, 6-c-1)

Weigand, S. A., Lunkenheimer Co., Beekman & Waverly Aves., Cincinnati, O. (53-c, 53-g)

Wellman, F. S., Pres., Wellman Bronze & Aluminum Co., 6017 Superior Ave., N. E., Cleveland, O. (53-b)

Westover, Jeff. Alan, Supv. of Standards, Burnside Steel Foundry Co., 1300 E. 92nd St., Chicago, Ill. (4-c)

Wick, J. L., Jr., Pres., Falcon Bronze Co., 218 S. Phelps St., Youngstown, O. (Board of Awards, Nominating Committee, 6-a-1)

Wilke, R. E., Fdry. Met., John Deere Tractor Co., Waterloo, Ia. (6-b-5)

Wilson, L. C., Gen. Mgr., Reading Steel Casting Div., American Chain & Cable Co., Reading, Pa. (6-a-1, 24-k, 51-a, 51-e, 51-g, 51-l)

Wise, E. M., Staff Advisor, International Nickel Co., 30 Oak St., Bayonne, N. J. (53-c)

Wise, L. J., Mgr., Res. & Development, Chicago Malleable Castings Co., 120th and S. Racine, Chicago, Ill. (4, 49, 49-a, 52, 52-a, 52-b)

Wittfoht, B. B., Factory Training Supv., Caterpillar Tractor Co., Peoria, Ill. (3, 3-a, 3-c)

Wolf, F. L., Tech. Dir., Ohio Brass Co., Mansfield, O. (24-h, 52-g, 53-h)

Wolff, C. J., c/b Walter Freeman & Co., 111 W. Washington St., Chicago, Ill. (Advisory Board)

Wood, S. V., Pres. & Mgr., Minneapolis Electric Steel Castings Co., 3800 N. E. 5th St., Minneapolis, Minn. (51-b)

Woodliff, E. E., Harry W. Dietert Co. (Address: 14862 Forrer St.), Detroit, Mich. (4-f, 6-b-2)

Woody, J. A., Asst. Works Mgr., American Cast Iron Pipe Co., Birmingham, Ala. (50-c)

Wright, A. S., Met., Hunt-Spiller Mfg. Corp., 383 Dorchester Ave., Boston, Mass. (50-o)

Yost, Donald Lee, Fdry. Met., Budd Wheel Co. (Address: 12051 Wade St.), Detroit, Mich. (4-f)

Young, E. R., Met. Engr., Climax Molybdenum Co., 230 N. Michigan Ave., Chicago, Ill. (50-a, 51-d)

Ziegler, N. A., Res. Met., Crane Co., 4100 S. Kedzie Ave., Chicago, Ill. (53-b)

Zirzow, E. C., Chief Chemist, National Malleable & Steel Castings Co., 10600 Quincy Ave., Cleveland, O. (6-a, 6-b-4)

Zuege, D. C., Tech. Dir., Sivy Steel Castings Co., Milwaukee, Wis. (4, 6-a-1, 6-b-7, 51-a, 51-d, 51-o)

CHAPTER DIRECTORY

Chicago Chapter

Meetings—2nd Monday, monthly, Medinah Club of Chicago.
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 Vice-Chairman—G. P. Phillips, International Harvester Co.
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 Treasurer—C. C. Kavin, C. C. Kavin Co.
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 J. J. Fox, Wisconsin Steel Co.
 L. J. Wise, Chicago Malleable Castings Co.
 H. Kenneth Briggs, Western Foundry Co.
 H. W. Johnson, Greenlee Foundry Co.
 A. W. Gregg, Whiting Corp.
 W. C. Packard, National Engineering Co.
 B. J. Aamodt, National Malleable & Steel Casting Co.
 J. H. Abbott, Hickman, Williams & Co.
 L. F. Lottier, Peoples Gas, Light & Coke Co.
 L. H. Rudesill, Griffin Wheel Co.

Northeastern Ohio Chapter

Meetings—2nd Thursday, monthly, Cleveland Club, Cleveland.
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 B. G. Parker, Youngstown Foundry & Machine Co., Youngstown.
 Marcel Reymann, Atlantic Foundry Co., Akron.
 L. P. Robinson, Werner G. Smith Co.
 S. P. Schloss, Superior Foundry Co.
 Frank G. Steinebach, "The Foundry."
 F. A. Stewart, National Malleable & Steel Castings Co.

Quad City Chapter

Meetings—3rd Monday, monthly, rotate between Davenport, Iowa; Moline, East Moline and Rock Island, Ill.
 Chairman—Herman Alex, Rock Island Arsenal, Rock Island, Ill.
 Vice-Chairman—Nathan Lesser, Deere & Co., Moline, Ill.
 Secretary-Treasurer—J. Morgan Johnson, Tri-City Manufacturers' Association, Moline, Ill.
 Directors—M. J. Gregory, Caterpillar Tractor Co., Peoria
 P. T. Bancroft, Moline.
 L. W. Starnier, Frank Foundries Corp., Moline
 H. Bornstein, Deere & Co., Moline.
 L. E. Roby, Jr., Peoria Malleable Castings Co., Peoria.
 E. C. Wussow, Williams-White & Co., Moline.

Ray Wendland, International Harvester Co., Rock Island.
 Frank W. Wells, J. I. Case Co., Rock Island.
 Earl Snoddy, Blackhawk Foundry & Machine Co., Davenport, Iowa.

Detroit Chapter

Meetings—3rd Thursday, monthly, Fort Shelby Hotel, Detroit.
 Chairman—Harry W. Dietert, Harry W. Dietert Co.
 Vice-Chairman—J. H. Crawley, McKinnon Industries, Ltd., St. Catharines, Ont., Canada.
 Secretary—H. J. Deutsch, Aluminum Co. of America.
 Treasurer—Wm. W. Bowring, F. B. Stevens, Inc.
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 Howard McCoy, Cadillac Motor Car Co.
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 A. J. Conter, Chrysler Corp., Dodge Division.
 R. B. Crawford, Atlas Foundry Co.
 F. A. Melmoth, Detroit Steel Casting Co.
 Fred Walls, International Nickel Co.
 Glenn Coley, Detroit-Edison Co.
 Otto E. Goudy, Kelsey-Hayes Wheel Co.
 L. G. Korte, Riley Stoker Corp.
 E. L. Morrison, Budd Wheel Co.

St. Louis District Chapter.

Meetings—2nd Thursday, monthly, York Hotel, St. Louis.
 Chairman—L. E. Everett, Key Co., East St. Louis, Ill.
 Vice Chairman—W. Carter Bliss, Scullin Steel Co., St. Louis.
 Secretary-Treasurer—J. W. Kelin, Federated Metals Div., American Smelting & Refining Co., St. Louis.
 Directors—L. Desparois, Pickands, Mather & Co.
 G. S. Haley, Century Foundry Co.
 George Mitsch, American Car & Foundry Co.
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 C. H. Morken, Carondelet Foundry Co.
 L. C. Farquhar, American Steel Foundries, Granite City, Ill.
 A. O. Nilles, Griffin Wheel Co., N. Kansas City.
 Webb Kammerer, Midvale Mining & Mfg. Co.
 L. J. Filstead, John C. Kupferle Foundry Co.
 H. Sanders, American Foundry & Mfg. Co.
 C. E. Rothweiler, Hickman, Williams & Co.

Metropolitan Philadelphia Chapter

Meetings—2nd Friday, monthly, Engineers' Club, Philadelphia.
 Chairman—W. C. Hartmann, Bethlehem Steel Co., Bethlehem, Pa.
 Vice-Chairman—R. J. Keeley, Ajax Metal Co., Philadelphia, Pa.
 Secretary-Treasurer—W. B. Coleman, W. B. Coleman & Co., 1920 W. Indiana Ave., Philadelphia.

Directors—C. A. Bever, Bethlehem Steel Co., Bethlehem, Pa.
 J. T. Fegley, North Bros. Mfg. Co.
 L. W. Harris, Link-Belt Co.
 H. Reiting, U. S. Pipe & Foundry Co., Burlington, N. J.
 John H. S. Spencer, H. W. Butterworth & Sons Co., Bethayres, Mont Co., Pa.
 M. R. Taggart, Taggart & Co., Philadelphia, Pa.

Wisconsin Chapter

Meetings—3rd Friday, monthly, Schroeder Hotel, Milwaukee.
 President—W. J. MacNeill, Federal Malleable Corp., West Allis.
 Vice-President—B. D. Claffey, General Malleable Corp., Waukesha.
 Secretary—A. C. Ziebell, Universal Foundry Co., Oshkosh.
 Treasurer—M. J. Carpenter, Carpenter Brothers, Inc.
 Directors—Roy M. Jacobs, Standard Brass Works.
 Ray Flansburg, Belle City Malleable Iron Co., Racine.
 Harry Donald, Interstate Supply & Equipment Co.
 A. F. Genthe, Harnischfeger Corp.
 R. S. MacPherran, Allis-Chalmers Mfg. Co., West Allis.
 E. L. Roth, Motor Castings Co.
 T. E. Ward, Badger Malleable & Mfg. Co.

Northern California Chapter

Meetings—2nd Friday, monthly.
 Chairman—S. D. Russell, Phoenix Iron Works, Oakland
 Vice Chairman—L. L. Johnson, Pacific Steel Castings Co., Berkeley.
 Secretary-Treasurer—G. L. Kennard, Northern California Foundrymen's Institute, San Francisco.
 Directors—J. K. Benedict, H. C. Donaldson Co., San Francisco.
 Harold Martin, Vulcan Foundry Co., Oakland.
 M. M. Morison, Balfour Guthrie & Co., Ltd., San Francisco.
 M. G. Wilson, Wilson & Nutwell, Fresno.
 J. D. Fenstermacher, Columbia Steel Co., San Francisco.
 A. W. Allen, San Francisco Stove Works, San Francisco.
 H. A. Bossi, H. C. Macaulay Foundry Co., Berkeley.
 F. R. Geis, Metallurgical Laboratories, San Francisco.

Birmingham Chapter

Meetings—3rd Friday, monthly, Tutwiler Hotel, Birmingham.
 Chairman—R. C. Harrell, Stockham Pipe Fittings Co.
 Vice-Chairman—W. O. McMahon, Sloss-Sheffield Steel & Iron Co.
 Secretary-Treasurer—J. A. Bowers, American Cast Iron Pipe Co.
 Directors—W. E. Curran, Republic Steel Corp.
 R. R. Deas, Jr., American Cast Iron Pipe Co.
 C. B. Saunders, Tennessee Coal, Iron & R. R. Co.
 A. S. Holberg, Alabama Clay Products Co.
 H. A. Newbury, Newbury Mfg. Co., Talladega, Ala.

W. L. Roueche, Sr., McWane
Cast Iron Pipe Co.
L. N. Shannon, Stockham Pipe
Fittings Co.
R. K. Durkan, M. W. Warren
Coke Co.

Buffalo Chapter

Meetings—1st Monday, monthly.
Chairman—W. J. Corbett, Atlas Steel Cast-
ing Co.
Vice-Chairman—John McCallum, McCallum-
Hatch Bronze Co.
Secretary—J. R. Wark, Queen City Sand &
Supply Co.
Treasurer—R. K. Glass, Republic Steel Corp.
Directors—Alex Rankin, Lake Erie Engineer-
ing Corp.
Jos. Mayer, Lumen Bearing Co.
M. W. Pohlman, Pohlman Foundry
Co.
W. S. Miller, C. C. Kavin Co.
R. T. Rycroft, Jewell Alloy &
Malleable Co.
V. M. Mazurie, Buffalo Foundry
& Machine Co.
J. P. Begley, Pratt & Lechtworth
Co.

Southern California Chapter

Meetings—4th Thursday, monthly.
Chairman—A. G. Zima, International Nickel
Co.
Vice-Chairman—Jas. E. Eppley, Kinney Iron
Works.
Secretary—W. F. Haggman, Foundry Spe-
cialties Co., Huntington Park.
Treasurer—Charles R. Gregg, Reliance Reg-
ulator Corp., Alhambra.
Directors—R. J. Crichton, American Brake
Shoe & Foundry Co.
Pasquale Arpea, Axelson Mfg.
Co.
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Steel Products, Inc.
Thomas J. McGraw, Jas. E. Mc-
Graw & Son, Brea.
J. E. Wilson, Climax Molybden-
um Co.
Wm. Feltes, Westelectric Cast-
ings, Inc.
Silas R. Kimberly, Los Angeles
Steel Casting Co.
D. E. Lingenfelter, Quality Foundry
& Mfg. Co.
J. G. Coffman, Los Angeles Steel
Casting Co.

Metropolitan New York-New Jersey Chapter

Meetings—1st Monday, monthly, Essex
House, Newark, N. J.
Chairman—W. E. Day, Jr., Mack Mfg.
Corp., New Brunswick, N. J.
Vice-Chairman—R. J. Allen, Worthington
Pump & Machinery Co., Harrison, N. J.
Secretary—W. A. Phair, "The Iron Age,"
New York City.
Treasurer—Samuel Frankel, H. Kramer & Co.,
New York City.
Directors—George Hochgesang, American
Brake Shoe & Foundry Co.,
Mahwah, N. J.
T. D. Parker, Climax Molybden-
um Co., New York City.
D. J. Reese, International Nickel
Co., New York City.
J. W. Reid, Robins Conveying
Belt Co., Passaic, N. J.
Sam Tour, Lucius Pitkin, Inc.,
New York City.
R. E. Nesbitt, Pratt Institute,
Brooklyn.
J. P. Nevin, Otis Elevator Co.,
Yonkers.
W. G. Reichert, Singer Mfg. Co.,
Elizabeth, N. J.

T. J. Wood, American Brake
Shoe & Foundry Co., Mahwah,
N. J.

Northern Illinois-Southern Wisconsin Chapter

Meetings—2nd Tuesday, monthly, rotating
between Rockford and Freeport, Ill., and
Beloit, Wis.
Chairman—G. J. Landstrom, Sundstrand
Machine Tool Co., Rockford.
Vice-Chairman—P. A. Paulson, Gunite Found-
ries Corp., Rockford.
Technical Secretary—H. C. Winte, Fair-
banks Morse & Co., Beloit, Wis.
Secretary-Treasurer—G. K. Minert, Gunite
Foundries Corp., Rockford.
Directors—August Christen, Arcade Mfg.
Co., Freeport.
A. W. Wiegert, Geo. D. Roper
Corp., Rockford.
W. L. Davey, W. L. Davey Pump
Co., Rockford.
H. F. Halverson, Beloit Foundry
Co., Beloit, Wis.
C. M. Dale, Liberty Foundries
Co., Rockford.
Eli Johnson, Greenlee Bros. &
Co., Rockford.
Harry J. Wade, Fairbanks Morse
& Co., Beloit, Wis.
John T. Clausen, Greenlee Bros.
& Co., Rockford.

Ontario Chapter

Meetings—3rd Friday, monthly.
Chairman—D. J. Macdonald, Dominion Rad-
iator & Boiler Co., Ltd., Toronto.
Vice-Chairman—D. M. Storie, Fittings Ltd.,
Oshawa.
Secretary-Treasurer—S. R. Francis, Metals &
Alloys, Ltd., Toronto.
Directors—Joseph Sully, Sully Brass Foundry,
Toronto.
O. W. Ellis, Ontario Research
Foundation, Toronto.
W. R. Barnes, W. R. Barnes &
Co., Hamilton.
N. B. Clarke, F. B. Stevens, Inc.,
Toronto.
J. J. McFadyen, Galt Malleable
Iron Co., Galt.
John Thwaites, Beatty Bros. Ltd.,
Fergus.
J. W. Hall, Fehralloy, Ltd.,
Orilla.
John Reid, Canadian Westing-
house Co., Ltd. Hamilton.

Michiana Chapter

Meetings—Tuesday following 2nd Monday,
monthly, Hotel Oliver, South Bend.
Chairman—A. C. Arbogast, Northern Indi-
ana Brass Co., Elkhart.
Vice-Chairman—M. F. Doty, Clark Equip-
ment Co., Buchanan, Mich.
Secretary-Treasurer—L. L. Andrus, American
Foundry Equipment Co., Mishawaka.
Directors—W. A. Bachman, New York Cen-
tral Railroad, Elkhart.
E. C. Bumke, Oliver Farm Equip-
ment Co., South Bend.
A. H. Fries, Peru Foundry Co.,
Peru.
W. R. Gilmore, Superior Steel &
Malleable Castings Co., Ben-
ton Harbor.
H. Klouman, Michiana Products
Corp., Michigan City.
E. G. Mahin, University of Notre
Dame, Notre Dame.
R. J. McSherry, Studebaker
Corp., South Bend.
O. A. Pfaff, American Foundry
Equipment Co., Mishawaka.
A. J. Rumely, LaPorte Foundry
Co., LaPorte.

W. A. Schlosser, Argos Foundry
Co., Plymouth.
George E. Stoll, Bendix Products
Corp., South Bend.

Central New York Chapter

Meetings—2nd Friday, monthly, Hotel On-
ondaga, Syracuse.
Chairman—H. H. Judson, Goulds Pumps,
Inc., Seneca Falls.
Vice-Chairman—Frank C. Wheeler, Kimman
& Wheeler, Syracuse.
Secretary—L. D. Wright, U. S. Radiator
Corp., Geneva.
Treasurer—E. J. Bair, Utica Radiator Corp.,
Utica.
Directors—A. C. Davis, Cornell University,
Ithaca.
L. E. Hall, Syracuse Chilled Plow
Co., Syracuse.
J. J. Jardine, Caldwell & Ward
Brass Foundry, Syracuse.
J. L. Lonergan, Morris Machine
Works, Baldwinsville.
G. M. Thrasher, R. Lavin & Sons,
Elmira.
W. Jones, International Heater
Co., Utica.
F. F. Shortsleeve, Elmira.
N. H. Boardman, Elmira Foundry
Co., Elmira.
J. W. Barker, Andes Range &
Furnace Corp., Geneva.

Cincinnati Chapter

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ing Machine Co.
Vice Chairman—H. F. McFarlin, Lunken-
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Secretary—E. T. Korten, Reliable Pattern &
Castings Co.
Treasurer—Robert Frankl, Superior Pattern
Co.
Directors—Earl H. Thompson, H. P. Deuschel
Co., Hamilton.
E. F. Loges, Kramer Bros. Foundry,
Dayton.
Chester Peebles, Stedman's
Foundry & Machine Works,
Aurora, Ind.
William Ball, Edna Brass Mfg.
Co.
Ray Redmond, Buckeye Foundry
Co.

Central Indiana Chapter

Chairman—I. R. Wagner, Electric Steel
Castings Co., Indianapolis.
Vice-Chairman—B. E. Gavin, National Malle-
able & Steel Castings Co., Indianapolis.
Treasurer—J. P. Lentz, International Har-
vester Co., Indianapolis.
Secretary—R. A. Thompson, Electric Steel
Castings Co., Indianapolis.
Directors—R. L. McIlvaine, Swayne-Robinson
Co., Richmond.
E. G. Schmidt, Jr., International
Harvester Co., Indianapolis.
B. P. Mulcahy, Citizens' Gas &
Coke Utility, Indianapolis.
L. M. McAnly, Rockwood Mfg.
Co., Indianapolis.
M. B. Falvey, Hoosier Iron
Works, Kokomo.
L. E. Davis, Republic Coal &
Coke Co., Terre Haute.
S. A. Norrick, Perfect Circle Co.,
New Castle.
S. C. Wasson, National Malle-
able & Steel Co., Indianapolis.
H. B. Harvey, Indiana Foundry
Corp., Muncie.
C. M. Hardy, Hougland &
Hardy, Inc., Evansville.

CHAPTER ACTIVITIES

Wheeler Talks Before N. Y.-N. J. Chapter

By K. A. De Longe*, Bayonne, N. J.

"STEEL foundries today produce castings which 20 or 25 years ago would not even have been attempted because of their apparent impossibility," declared Speaker K. V. Wheeler, vice-president, American Steel Castings Co., in introducing his talk on "Design Factors Affecting Castings," before some 80 members and guests at the Dec. 4 meeting of the Metropolitan N. Y.-N. J. Chapter of the A.F.A. held at the Essex House, Newark, N. J., with Chapter Chairman W. E. Day, Jr., Mack Manufacturing Co., New Brunswick, N. J., presiding.

The success of today's progressive foundries in coping with the need for intricate and complicated steel castings now in every-day use hinges primarily upon close cooperation between the designing engineer and the foundryman, said Mr. Wheeler. Consideration of casting principles has made possible the elimination of defects and has enabled the use of lighter metal sections with attendant reductions in casting weights.

With an interesting series of slides the speaker showed numerous examples of complicated steel castings produced by the careful proportioning of the metal sections involved and by the intelligent use of chills and risers. The production of a typical casting, a multi-stage pump housing, was traced from the drawing board to the finished product to demonstrate how joint planning by the designing and foundry departments produced a casting which could be properly poured and fed. Mr. Wheeler recommended the use of generous fillets wherever possible to eliminate stress concentrations; he suggested that pouring temperatures, especially those for alloy steels, need be carefully controlled to secure

the best results. The use of internal chills was recommended when casting shrinks could not be eliminated satisfactorily and economically by other means.

Mr. Wheeler said he saw no reason why foundrymen should shy from the use of welding to remedy casting defects when by so doing they were improving their product. Integrity, accuracy of dimension, and satisfactory appearance in the order named, were considered to be the prime requisites of quality castings. In conclusion, the

speaker stated that the ability of a foundry to produce high grade steel castings was entirely dependent upon possessing a well trained, cooperative organization.

A discussion, skillfully guided by Technical Chairman L. A. Klever, Taylor Wharton Iron and Steel Co., High Bridge, N. J., and centering upon the welding of castings and the use of radiography in detecting defects, followed the well received talk.

Preceding Mr. Wheeler's talk, an instructive film entitled "The Story of the Chilled Car Wheel" was presented by the Association of Mfgs. of Chilled Car Wheels, Chicago.

Central Indiana Holds Chapter Organization Meeting

THE eighteenth chapter of the Association was organized December 4 at a meeting held at the Columbia Club, Indianapolis. This chapter will cover the territory of central Indiana, centering at Indianapolis, and the name "Central Indiana Chapter" has been tentatively adopted. Some 125 members and guests attended the meeting, representing Marion, Anderson, Columbus, Evansville, Kokomo, Muncie, New Castle, Richmond, Terre Haute and Indianapolis foundries.

I. R. Wagner, vice-president, Electric Steel Castings Co., Indianapolis, opened the meeting as temporary chairman. He presented R. E. Kennedy, Secretary of the Association, who explained the purpose of the meeting, stating that it had been called on the petition of a number of members which petition had been approved by the Board of Directors. He stated that, following the usual procedure, a nominating committee had been appointed to present a slate of officers and directors for approval. Those nominated and unanimously elected were:

Chairman—I. R. Wagner, vice-president, Electric Steel Castings Co., Indianapolis.

Vice-Chairman—B. E. Gavin, plant engineer, National Malleable & Steel Castings Co., Indianapolis.

Treasurer—J. P. Lentz, foundry metallurgist, International Harvester Co., Indianapolis.

Secretary—R. A. Thompson, Electric Steel Castings Co., Indianapolis.

Directors—R. L. McIlvaine, sales manager, Swayne-Robinson Co., Richmond.

E. G. Schmidt, Jr., International Harvester Co., Indianapolis.

B. P. Mulcahy, research engineer, Citizens Gas Coke Utility, Indianapolis.

L. M. McAnly, general superintendent, Rockwood Mfg. Co., Indianapolis.

M. B. Falvey, manager, Hoosier Iron Works, Kokomo.

L. E. Davis, Republic Coal & Coke Co., Terre Haute.

S. A. Norrick, plant manager, Perfect Circle Co., New Castle.

S. C. Wasson, manager, National Malleable & Steel Castings Co., Indianapolis.

H. B. Harvey, president, Indiana Foundry Corp., Muncie.

C. M. Hardy, president, Hougland & Hardy, Inc., Evansville.

Following the election the new officers and directors were introduced and the meeting turned over to Mr. Wagner as official chairman of the chapter.

Mr. Wagner then introduced as the speaker of the evening,

AMERICAN FOUNDRYMAN

*International Nickel Co., Inc., and Assistant Secretary, Metropolitan New York-New Jersey Chapter.

W. R. Jennings, foundry superintendent, John Deere Tractor Works, Waterloo, Iowa. Mr. Jennings' talk on foundry molding production methods was exceedingly enlightening, pointing out that while the casting art was of ancient origin, yet technically-controlled quantity-production was quite new. After discussing recent trends in core making, sand control, molding machines and melting procedures, Mr. Jennings showed, by means of slides, specific examples of machine production of tractor parts produced in the John Deere plant at Waterloo. He discussed the economics of the various methods, stressing the fact that service to the mold-er was of the highest importance and that maintenance of good operating condition was paramount. He cited the fact that an investment of \$10,000 in equipment was equivalent to one man and that any shut-down of such a unit meant that one man's wages were being expended without any returns. Mr. Jennings cited the necessity for studying all operations to prevent waste of time and materials.

National President's Night at Philadelphia

By J. T. Fegley*, Philadelphia, Pa.

TWO hundred and fifty-six members and friends of the Metropolitan-Philadelphia Chapter met at dinner, November 27, Engineers Club, to honor our National President, Henry S. Washburn, Plainville Casting Co., Plainville, Conn. It has become an annual affair with us to thus welcome the President of A.F.A. at a special meeting of the chapter, without the customary technical discussions.

Mr. Washburn made a short address and urged our members to support the national body, which now represents eighteen chapters throughout the country with a membership of over 3,000. Among those present were Marshall Post, past president of A.F.A.; Don Reese, the first

chairman of the first chapter formed and also a past chairman of Metropolitan New York-New Jersey Chapter; Sam Tour, a director; Julian Greenstreet, chairman, Reading Foundrymen's Association, Reading, Pa.; L. G. Tarantino, secretary, Connecticut Non-Ferrous Foundrymen's Association; and Gordon E. Jones, vice-chairman, Southern

Division, National Founders Association. Lee Harris acted as toastmaster.

Following the dinner, Dr. Michael Dorizas, a nationally known traveler and lecturer at the University of Pennsylvania, gave a talk with motion pictures on his tour through Spain, Poland and Germany during the past summer.

Ontario Chapter Studies Foundry Facings

By G. L. White,* Toronto, Ont., Canada

THE meeting of the Ontario Chapter, November 24, Carls-Rite Hotel, Toronto, brought together about 100 foundrymen to hear Dr. J. Ridderhof, Frederick B. Stevens Co., Detroit, speak on "Foundry Facings." Chairman D. J. Macdonald, Dominion Radiator & Boiler Co., Ltd., Toronto, turned the meeting over to Vice-Chairman D. J. Storie, Fittings, Ltd., Oshawa, for the introduction of the speaker. During the dinner, Duncan Cowan at the piano and accordion, led a sing-song and a second popular feature was a raffle of a handsome smoking stand, with proceeds going towards the purchase of a public address system for the chapter.

Dr. Ridderhof pointed out in his address that the recognition of the improvements possible through the use of mold and core coatings did not result in rapid progress until competition forced advances in casting finish. He outlined the properties and the influence upon molding operations of four classes of facings: (1) Seacoal, (2) core wash, (3) plumbago, and (4) partings.

Seacoal in facing sand aids in producing a smoother casting and in the peeling of the sand from the casting. The addition of seacoal effects all the physical properties of the molding sand, increasing green and dry compression strength and mold hardness, while decreasing green and dry permeability, expansion, and contraction and flowability. Sintering point of the sand is raised, volume of gas given off

and moisture required for tempering is increased.

Grain size of seacoal used should be as close as possible to that of the facing sand to avoid reduction in permeability. Amounts used vary from 1 part to 20 parts sand to 1 part to 5 parts sand, or from 1.5 to 6 per cent by weight. The percentage increased with the grain size of the sand and the size of the casting.

Desirable characteristics for seacoal are volatile matter 33-36 per cent; sulphur, not more than 1 per cent; ash, not higher than



Metropolitan Philadelphia Chapter Holds Annual President's Night. Top—The Dinner Meeting. Center—President Washburn Speaks. Bottom—Chapter Officers at Speakers' Table.

Photos, Courtesy W. B. Coleman, W. B. Coleman Co., Philadelphia



*North Bros. Mfg. Co., and Chairman, Publicity Committee, Metropolitan Philadelphia Chapter.

*Canadian Metals and Metallurgical Industries.

6-7 per cent; and moisture, 1.5 per cent or less.

Under the heading of core washes comes all materials applied as surface coatings on sand cores. Application may be by dry sand or baked cores by dipping, spraying or brushing, and to green sand or unbaked cores by dipping or spraying. Where cores are dipped hot, their temperature should not exceed 200 deg. F. in order to avoid steam formation.

Baume readings are generally used for control of consistency, of the suspension. Common basic ingredients of core washes are graphite, coke, hard coal, although some have a silica base. Clay is usually added to hold solid matter in suspension and a water soluble binder aids adherence to the core. A core wash that has been mixed until completely de-aired gives the best surface on castings. Careful control of core washes will result in better castings.

Plumbago is a graphite base facing and is generally used on green sand mold surfaces and

may be finely ground pure graphite or contain other ingredients to give varying properties. In crystalline graphite, even when finely ground, a flaky characteristic persists. Amorphous graphite grinds more finely than the crystalline, is dull, black in color. Plumbago is often bought on specification of screen particle size, volatile matter and graphitic carbon.

In some cases, too high quality plumbago causes adherence troubles that are eliminated by a lower grade material. Present tendency is to spray plumbago on in molasses-water mixture.

Parting materials are shaken on the sand joints, loose patterns or pattern plates to insure a clean lift of the pattern or a clean separation of the coke from the drag. Finely pulverized charcoal, sheets of paper and oil, and dust from tumbling barrels or sand blast chambers have been employed. A natural parting, lycopodium, is expensive but does a beautiful job on ornamental work. Ground limestone and ground calcium phosphate make good partings.

high permeability and one that could be rammed very hard.

In commenting on coke size, Mr. Loeffler suggested that the coke diameter should be about one-twelfth the diameter of the cupola. With regard to metal size in charges, he thought that no piece should be larger than one-third the diameter of the cupola. Mr. Loeffler also mentioned that limestone was a good flux and that he favored using a double portion on the bed.

In discussing melting, he commented on methods of tapping and slagging. The speaker believed in slagging the cupola at the spout.

The discussion centered around such subjects as production of high strength irons without the use of alloys, melting temperatures, coke properties, sulphur content, and the effect of proper balancing of the charges so as to give adequate machinability in the castings.

At the non-ferrous round table discussion, Mr. May outlined various types of brass melting furnaces and discussed the effect of melting atmospheres on the gassing of metal. He discussed such other questions as the use of fluor spar or glass as metal covers, the cost of metal electrically melted, the cause of shrinks, electric furnace charges, the addition of gates to the metal to cool it when the gates have sand on them, etc. Mr. May advocated pouring the metal as cool as possible to avoid shrinks and pointed out that in his foundry they pour 15 to 20 different kinds of metals and alloys per day with a melting loss in the electric furnace of 0.5 per cent.

Wisconsin Holds Round Table

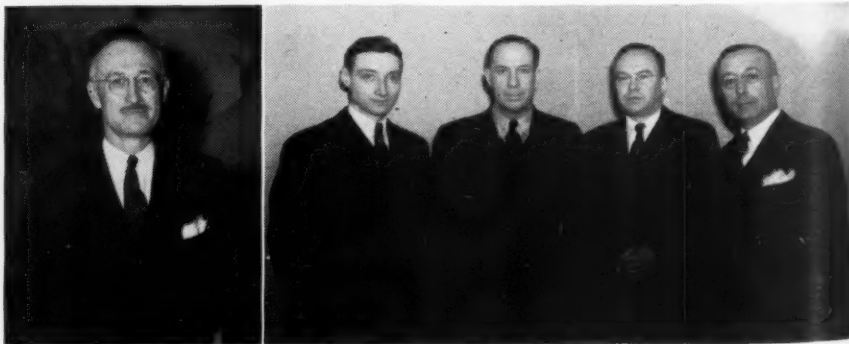
By A. C. Ziebell,* Oshkosh, Wis.

THE November 18 meeting of the Wisconsin Chapter was a round table, divided into four discussion groups of gray iron, steel, malleable and non-ferrous foundry practice. The meeting was held in the Hotel Schroeder, Milwaukee, with W. J. MacNeill, Federal Malleable Co., West Allis, Wis., president of the chapter, presiding.

Leaders of the discussion groups were as follows: Martin Loeffler, Western Foundry Co., Chicago, *gray iron*; F. C. Scheiber, Whiting Corp., Harvey, Ill., *malleable*; W. Harvey Payne, Chicago, *steel*; and Don May, Crane Co., Chicago, *non-ferrous*.

The gray iron round table, led by Mr. Loeffler, discussed gray iron melting. At the beginning of the discussion, Mr. Loeffler outlined the proper procedure for getting the cupola ready and

mentioned such facts as the desirability of removing glaze from the cupola walls so that patching material would adhere. He stated that a patching material consisted of fire clay and silica and that before this material was rammed into place, the walls should be smeared with clay wash. The bottom sand should be strongly bonded sand with



Photos, Courtesy John Bing, A. P. Green Firebrick Co., Milwaukee
Speakers at Wisconsin Chapter Round Table. Left to Right—W. Harvey Payne, Chicago; Don May, Crane Co., Chicago; Martin Loeffler, Western Foundry Co., Chicago; W. A. Hambley, Allis-Chalmers Mfg. Co., Milwaukee; F. C. Scheiber, Whiting Corp., Harvey, Ill.

*Universal Castings Co., and Secretary, Wisconsin Chapter.

At the malleable round table, Mr. Scheiber first read a short paper on the various melting methods used in the malleable industry with particular reference to the air-furnace-cupola duplexing method. During the discussion, Mr. Scheiber amplified the information given in his paper. Particular attention was

given, during the discussion, to physical properties of duplexed metal, and change in melting technique required when substituting low volatile for high volatile coal.

In the steel session, Mr. Payne's discussion centered around electric furnace practice.

Detroit Chapter Meets With Society of Automotive Engineers

O. E. Goudy*, Detroit

A JOINT meeting of the Detroit Chapter, A.F.A. and S.A.E., was held at the Statler Hotel on Monday, December 4, 1939. With an attendance of some 300 members and guests, J. Geschelin, Chairman, introduced Alex Dow, president, Detroit Edison Co., who spoke on "Ordnance Work in the Detroit Area." Mr. Dow, who serves as civilian co-ordinator in this district, told how our country had been set up into various districts, for the purpose of manufacturing war materials, so that should war come, each district would manufacture materials most suited to its particular locality.

Mr. Dow, also, told how each plant, in each district, had been listed, so that in the event of war, each plant would know, at very short notice, just what it would manufacture, or what its procedure would be.

The technical part of the meeting followed Mr. Dow's talk, and the subject was "Relationship Between Hardness, Microstructure, and Wear of Cylinder Bores and Rings." The first speaker was E. K. Smith, metallurgist, Electro Metallurgical Co., Detroit. Mr. Smith's talk, accompanied by illustrative slides, showed the microstructure on various samples taken from cylinder blocks, which had been in actual test service. He further showed that two irons of like hardness and composition might have entirely different wearing qualities, depending upon their structure. Samples tested for wear and microstruc-

ture showed that the most undesirable was a dendritic type of structure, in which the fine graphite was entirely surrounded by ferrite.

The other speaker on this same topic was Paul S. Lane, research engineer, Koppers Co., American Hammered Piston Ring Division, Baltimore, Md. Mr. Lane spoke of wear as being an undesirable dimensional change, and while this might be generally true, he cited that in the case of piston rings it was desirable. By making a comparison between iron and steel, Mr. Lane showed that high hardness, strength, and purity, are not necessary to best wearing qualities, and cast iron, which is weaker and more brittle than steel, has far superior wearing qualities. This is generally believed to be due to the presence of graphite, which acts like a lubricant.

St. Louis Enjoys December Party

By J. W. Kelin*, St. Louis, Mo.

APPROXIMATELY 275 members and friends attended the Annual December Party of the St. Louis District Chapter. This was the largest attendance on record and was certainly most gratifying to the Entertainment Committee and its Chairman, Charles Rothweiler.

A fine turkey dinner was served during the earlier part of the evening and immediately followed by brief announcements, streamlined to be disposed of

*Federated Metals Div., American Smelting and Refining Co., and Secretary-Treasurer, St. Louis District Chapter.

quickly for the more prominent part of the evening's activity.

A two-hour vaudeville, musical comedy and stag show was presented and most thoroughly enjoyed by all present.

A number of out-of-town folks were there from Kansas City (300 miles distant), Evansville, Ind.; Quincy, Ill., and many other points, all demonstrating the keen interest in St. Louis District Chapter activities.

Southern California Holds Xmas Hi-Jinks

By W. F. Haggman*,
Huntington Park, Calif.

ON DECEMBER 16 at the Lakewood Country Club, Long Beach, Calif., over 300 members and guests attended the Annual Xmas Hi-Jinks sponsored by the Southern California Chapter. The program consisted of an excellent dinner and a two-hour vaudeville show.

Credit for this splendid party goes to the following men who are members of the entertainment committee: W. D. Bailey, Jr., Chairman; A. M. Barker, Joe Brunner, Jr., B. G. Emmett, Don McCrystal, Wm. Cormack and Elmo Finley.

*Foundry Specialties Co. and Secretary, Southern California Chapter.

Large Attendance at Wisconsin Chapter Party

By A. C. Ziebell*, Oshkosh, Wis.

WITH an attendance of 537, the Annual Christmas Party of the Wisconsin Chapter held December 15 at Hotel Schroeder, Milwaukee, has passed into history as one of the most successful parties that the Wisconsin Chapter has yet staged.

In addition to the excellent dinner and floor show, added features of the entertainment were stories by A. F. Genthe, Harnischfeger Corp., and solos by David McLain, McLain System, Inc., and Edward Roth, Motor Castings Co.

The committee in charge of the

*Universal Foundry Co. and Secretary, Wisconsin Chapter.

*Kelley-Hayes Wheel Co., and Chapter Reporter.

program was as follows: R. F. Jordan, Sterling Wheelbarrow Co., West Allis, *Chairman*; H. E. Fellows, Milwaukee Foundry

Equipment Co., Milwaukee; A. F. Genthe, Harnischfeger Corp., Milwaukee; A. C. Haack, Wisconsin Gray Iron Foundry Co.,

Milwaukee; C. L. Tanner, Tews Lime & Cement Co., Milwaukee, and L. V. Tuttle, Foundry Div., Koehring Co., Milwaukee.

At the Northern Illinois-Southern Wisconsin Chapter Christmas Party. Top—G. J. Landstrom, Sundstrand Machine Tool Co., Rockford, (2) J. C. Gore, Werner G. Smith Co., Chicago; G. K. Minert, Gunite Foundries Corp., Rockford, Chapter Secretary-Treasurer; D. E. Clifford, Hickman, Williams & Co., Chicago; F. E. Rundquist, Greenlee Bros. & Co., Rockford, Chairman of Entertainment Committee, and P. A. Paulson, Gunite Foundries Corp., Rockford, (3) Having a Good Time, (4) Close Harmony, (5) General View of the Diners.

Photos, Courtesy John Bing

Northern Illinois-Southern Wisconsin Holds Party

WITH over 250 in attendance, the Annual Christmas Party of the Northern Illinois-Southern Wisconsin Chapter was a great success. Following an excellent dinner, a fine floor show was held. Everyone present claimed this to be the acme of Christmas parties.

The committee in charge of the party was as follows:

Fred Rundquist, Greenlee Bros. Co., Rockford, Chairman.

Gust Christen, Arcade Mfg. Co., Freeport.

D. B. Clifford, Hickman Williams & Co., Chicago.

J. C. Gore, Werner G. Smith Co., Chicago.

O. W. Josephson, S. Obermayer Co., Rockford.

Julius Magnuson, J. S. McCormick Co., Chicago.

Lyle Manley, Manley Sand Co., Rockton, Ill.

Ives Waldo, Pickands, Mather Co., Chicago.

Walter Witke, Smith Oil & Refining Co., Rockford.

tion in the range of physical properties may be obtained from day to day from the same iron. He also outlined some of the metallurgical theory underlying the development of the newer type deoxidizers.

H. M. St. John, Crane Co., Chicago, spoke to the non-ferrous meeting on metal book-keeping. Mr. St. John took 100 lb. of metal and traced it to the final castings sold. He showed the various losses that occurred throughout the process and conclusively demonstrated that more saving could be obtained by proper metal control than by any other means.

Northeastern Ohio Celebrates Christmas

WITH over 750 present at its Annual Christmas Party, the Northeastern Ohio Chapter can point with pride not only to a record attendance but also to one of the best conducted parties of the year. Held in the Rainbow Room, Hotel Carter, Cleveland, those present enjoyed congregating together in the lobby and the foyer of the banquet hall, an excellent dinner, well served, and a talented floor show. Exclamations of "the best ever held" echoed throughout the room after the festivities.

Roast Addresses Buffalo Chapter

By J. R. Wark,* Buffalo, N. Y.

HAROLD J. ROAST, vice-president, Canadian Bronze Co., Ltd., Montreal, Can., chairman of the Non-Ferrous Division of the American Foundrymen's Association, was the prin-

*Queen City Sand & Supply Co., and Secretary, Buffalo District Chapter.

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Michiana Chapter Holds Round Table

By R. L. Orth*, Mishawaka, Ind.

THE December 12 meeting of the Michiana Chapter was held in the Oliver Hotel, South Bend, Ind., with Chairman A. C. Arbogast, Northern Indiana Brass Co., Elkhart, Ind., presiding. Following the usual dinner, the group divided into two groups to hear speakers on gray iron and non-ferrous subjects respectively. The gray iron group was addressed by R. G. McElwee, Vanadium Corp. of America, Detroit, who spoke on the deoxidation of gray irons, stressing the point that, by use of some of the newer deoxidizing materials available today, much less varia-

*American Foundry Equipment Co.

cipal speaker at the December 8 meeting of the Buffalo Chapter held in the Hotel Touraine, Buffalo. W. J. Corbett, Atlas Steel Casting Co., chairman of the Buffalo Chapter, presided.

The title of Mr. Roast's talk was "Honesty in the Foundry Business." Following his talk on this subject, Mr. Roast gave additional information on silicon bronzes.

Prior to the meeting, Mr. Charles W. Schlesinger, well known to Buffalonians as an

authority on Russia and Communism, gave a talk entitled "What's in a Name?" dealing with those subjects.

Buffalo Chapter is planning its annual stag party, to be held on January 12 at the Buffalo Catering Co., 831 Washington St., Buffalo. The program starts at 6:30 P. M. and will be called a Monte Carlo Night. Plans now call for a real western setting with various gambling games to be played with fake money. A buffet supper will be served.

Non-Ferrous Ingot Discussed by Tour at Philadelphia

By J. T. Fegley,* Philadelphia, Pa.

IN discussing the use of copper base non-ferrous ingots at the December 8 meeting of the Metropolitan Philadelphia Chapter, held in the Engineers Club, Philadelphia, Sam Tour, vice-president, Lucius Pitkin, Inc., New York, stressed the fact that copper is never lost in industry—it does not rust or corrode and disintegrate like iron and steel, but sooner or later finds its way through the various channels of trade from the junk dealer to the most modern plants who manufacture the non-ferrous ingot in large heats under the most scientific control to meet exacting analyses.

The Non-Ferrous Ingot Metal Institute, of which Mr. Tour is consultant, has been working with the A.S.T.M and has made great strides in recent years to standardize the hundreds of various mixtures that are demanded in ingot form by production and jobbing foundries. Some fine work has likewise been started on the proper nomenclature for the bronzes and bronzes that are more descriptive than the ones in use today, which are quite misleading.

Mr. Tour, with lantern slides, showed pictures of the various types of raw material that enter into the manufacture of non-ferrous ingots at one of the larger plants. He spoke of the advantages of ingot of known

composition over the extreme care necessary in making up a mixture in the foundry from new metals. He commented, however, that the ingot manufacturer cannot as yet secure as good a color on a casting as that compounded from new metals.

Sefing Gives Third Lecture at Syracuse

By L. D. Wright,* Geneva, N. Y.

THE Central New York Chapter held its December 8 meeting in the Onondago Hotel, Syracuse, with H. H. Judson, Gould Pumps, Inc., Seneca Falls, N. Y., chapter chairman, presiding.

F. G. Sefing, International Nickel Co., New York, presented the third of his series of four lectures on the "Metallurgy of Cast Iron." The subject of Mr. Sefing's third lecture was "The Effect of Alloying Elements on Cast Iron." Mr. Sefing pointed out that the two features that stand out in favor of cast iron over any other metal are wear resistance and corrosion resistance and discussed the types of irons with particular reference to the microstructures that give good wear resistance. According to Mr. Sefing, chromium is the best corrosion and heat resisting alloy, but, since chromium irons generally are more difficult to machine, the machinability, where necessary, oft-

times is improved by the addition of nickel up to about three times the chromium content.

In conclusion, Mr. Sefing pointed out that the production of alloy irons begins with a proper base iron for the purpose alloys in an improper iron will not bring forth the maximum intended and that the use of possibilities inherent in the alloy addition.

Birmingham Chapter Holds Conference in Chattanooga. Top—Left to Right—Front Row—H. W. Anderson, U. S. Pipe and Foundry Co., Chattanooga, Conference Chairman; L. N. Shannon, Stockham Pipe Fittings Co., Birmingham, A. F. A. Vice-President; R. C. Harrell, Stockham Pipe Fittings Co., Birmingham, Chapter Chairman; W. Guy Bagley, Republic Steel Corp., Birmingham. Back Row—Unidentified; R. L. Ogden, Stockham Pipe Fittings Co., Birmingham; W. E. Jones, Stockham Pipe Fittings Co., Birmingham; Joe T. Gilbert, Stockham Pipe Fittings Co., Birmingham; and J. J. Chandler. Center—Officers of Birmingham Chapter—Seated Left to Right—R. C. Harrell, L. N. Shannon, and J. A. Bowers, American Cast Iron Pipe Co., Birmingham, Chapter Secretary-Treasurer. Standing—C. K. Donoho, American Cast Iron Pipe Co., Birmingham, Chapter Program Chairman; C. B. Saunders, Tennessee Coal, Iron and Railroad Co., Birmingham, Past Chairman, Birmingham Chapter; and W. O. McMahon, Sloss-Sheffield Steel and Iron Co., Birmingham, Chapter Vice-Chairman. Bottom—A Group Attending the Conference.



*North Bros. Mfg. Co., and Chairman, Publicity Committee, Metropolitan Philadelphia Chapter.

*U. S. Radiator Corp.

N. E. F. A. Discuss Wear and Corrosion Resistant Irons

By M. A. Hosmer,* Boston, Mass.

F G. SEFING, International Nickel Co., New York, was the principal speaker at the December 13 meeting of the New England Foundrymen's Association at the Engineers Club, Boston, Mass.

At the beginning of his talk, Mr. Sefing distributed outlines of his talk to facilitate discussion. He first discussed wear resistance and stated that microstructure is the most important factor in this connection. He pointed out that several purchasers now are buying castings on specifications of microstructure and that many consumers have come to accept the payment of a premium price for quality castings.

According to Mr. Sefing, alloy irons are used to get combinations of strength, hardness, machinability and uniformity, unattainable in plain cast iron and that alloy irons should never be used unless they result in a better product insofar as the required characteristics are obtained. The speaker showed several slides giving typical microstructures which produced good and poor wear resistant qualities.

Mr. Sefing pointed out that white irons, austenitic irons, hot-quenched and heat-treated irons are employed in special cases to resist wear, particularly where the metal is subject to grinding and crushing action. He pointed out that wear resistance data compiled by Jominy shows that hardness is not a measure of the ability of iron to withstand wear.

Because of the wide variation in application and the condition surrounding applications, it is almost impossible to design a general type of wear test for a short time determination of that quality.

Turning to corrosion, Mr. Sefing pointed out that this is the change in form of material by some chemical action and that

chromium is the principal element used in combatting corrosive action. Austenitic irons containing 12-20 per cent nickel, 2-5 per cent chromium and 6 per cent copper are important corrosion resistant irons. Slides were shown giving the corrosion resistant qualities of that material when subjected to various types of corrosion. The material pointed out was 5 to 10 times better than plain iron in its resistance to acids, alkalines, etc.

Where high percentages of chromium are necessary to increase corrosion resistance, machinability is impaired and generally $3\frac{1}{2}$ times as much nickel is added to offset the difficulty.

In closing, Mr. Sefing pointed out the errors in advocating the use of an iron in a new application involving wear and corrosion without making a careful study of the requirements.

Charles Butler, Warren Pipe Company, presided at the meeting in the absence of both the president and vice-president. In opening the meeting, Mr. Butler appointed the following members to serve as a nominating committee and to report the names of candidates for officers of the Association for the coming year: A. S. Wright, Hunt-Spiller Mfg. Corp., Boston, Mass.; Henry Jensen, General Electric Co., Lynn, Mass.; and Walter Saunders, Jr., Walter Saunders Co., Providence, R. I.

Quad City Chapter Hears Talk on Graphitization

By J. Morgan Johnson,* Moline, Ill.

THE December 11 meeting of the Quad City Chapter was held at Hotel Blackhawk, Davenport, Iowa, with Herman Alex, Rock Island Arsenal, chapter chairman, presiding.

S. C. Massari, Association of

*Tri Cities Manufacturers Association and Secretary-Treasurer, Quad City Chapter.

Manufacturers of Chilled Car Wheels, was the principal speaker and had for his subject "Graphitizing Behavior of Iron." Mr. Massari's talk was based on his observations of the behavior of cast iron in the manufacture of chilled car wheels. Over a period of years, Mr. Massari has studied combustion in the cupola, the behavior of iron in various melts, heat treatment and annealing, and has reached certain conclusions as a result of his studies. Mr. Massari outlined the various conclusions which could be drawn from his studies and explained in detail the theory underlying the graphitization of iron.

Excuse It, Please

DUE to an oversight, the name of the principal speaker was omitted in the report of the November 14 meeting of the Cincinnati District Chapter. F. G. Sefing, International Nickel Co., New York, N. Y., was the speaker at the Dayton extension meeting on the above date. Mr. Sefing's talk dealt with the use of alloys in cast iron.

Help! Help! Front Cover Pictures Wanted

PAST issues of the *American Foundryman* have illustrated on the front cover action "shots" of foundry operations and special events of interest to the members of the Association. Many members have contributed photographs thus used and have received credit for same. In many instances, a short item has been carried in the body of the issue explaining the front cover illustration.

The editors of the *American Foundryman* will welcome action pictures of foundry operations or special foundry features which they can use on the front cover. Where possible pictures should be glossy prints and not less than 6x9 inches, although sometimes it is possible to reproduce smaller photographs.

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*Hunt-Spiller Mfg. Corp.

ABSTRACTS

NOTE: The following references to articles dealing with the many phases of the foundry industry, have been prepared by the staff of *American Foundryman*, from current technical and trade publications.

When copies of the complete articles are desired, photostat copies may be obtained from the Engineering Societies Library, 29 W. 39th Street, New York, N. Y.

Alloys

AGE-HARDENING. "Age-Hardening," by John T. Norton, *The Iron Age*, vol. 144, No. 14, October 5, 1939, pp. 25-30. Age-hardenable alloys are representative of the modern metallurgical trend in producing functional metals. The age-hardening process is composed of two steps, which are explained by the author. Progressing further into the study of this process, the author points out what mechanism is involved, what the newer age-hardenable alloys are and what properties they possess. (A1.)

ALUMINUM. "The Application of Aluminum and Its Alloys," *Aluminum and Non-Ferrous Review*, vol. 4, No. 11, October, 1939, pp. 339-340. Aluminum is no longer being regarded as a metal whose lightness only allows it to be used by aircraft and utensil industries. It is fast becoming one of the widely known metals. This paper discusses briefly the main metallurgical aspects and the bearing they have on the common applications of the metal. (A1.)

LEADED-BRONZE. "Leaded-Bronze Bearing Alloys," *Metal Industry* (London), vol. 55, No. 16, October 20, 1939, pp. 350-352. This is a presentation of the requirements and standards or recommendations of the I. B. F. non-ferrous sub-committee. This is a summary of the results of the work carried out by various bronze foundries. (A1.)

NITROGEN. "The Solubility of Nitrogen in Molten Iron-Silicon Alloys," by J. C. Vaughan and John Chipman, *Metals Technology*, vol. 6, No. 7, October, 1939, pp. 1-8. This paper presents the results of a study of the solubility of nitrogen, at pressures of approximately one atmosphere, in molten iron containing up to 15.8 per cent silicon. The results also indicated an iron nitride and an iron silicide in solution, and a silicon nitride of limited solubility in the melt. (A1.)

RESEARCH. "The Present State of Research Concerning the Corrosion and Protection of Light and Ultra-Light Alloys," by Dr. A. Von Zeerleder, *Aluminum and Non-Ferrous Review*, vol. 4, No. 11, October, 1939, pp. 343-345-346. This is a report of the systematic research of the author on various modern day problems dealing with the corrosion and protection of light and ultra-light alloys. The paper shows that a wrong thermal treatment, carried out subsequently, is injurious to the corrosion-resistance of light and ultra-light metals. In the working of aluminum, allowances are not made for the peculiarities of this metal. (A1.)

ZINC. "Development of Zinc Alloys," by E. Schmid, *Metal Industry* (London), vol. 55, No. 16, October 20, 1939, pp. 345-349. This paper deals with the fundamental principles underlying the development of the important group of high grade zinc alloys which have become available in the past few years. The report will give a general idea of the bases for the comparatively new high-class zinc alloys and of the peculiarities of this group of

alloys. The author stresses the importance of alloying constituents, the hexagonal structure and low melting point in this article. (A1.)

Aluminum

Ferrous Alloys Determination. "A New Method for the Determination of Aluminum in Ferrous Alloys," *Aluminum and Non-Ferrous Review*, vol. 4, No. 8, July, 1939, p. 241. The failure of methods for determining aluminum in ferrous alloys led to an investigation of 8-hydroxyquinoline as a precipitant. The article tells what conclusions were drawn by Mr. E. C. Pigott on this new method. (An.)

Analysis

RADIOGRAPHY. "Some Aspects of Radiographic Sensitivity in Testing With X-rays," by H. H. Lester, *A.S.T.M. Bulletin*, No. 100, October, 1939, pp. 33-40. This paper presents experimental data regarding focal distances to be used for good definitions on some commercial X-ray tubes. For best results, it is shown that d/t ratios should in some cases be as high as 20. Lower values are good enough for practical usage where the maximum definition is not required. The author shows that detectability depends upon the area of the image. In the article, penetrameters are discussed. They are deemed important in the determining the correctness of radiographic procedure but are not regarded as satisfactory sensitive gages. (An.)

Case Hardening

METHODS. "Case Hardening," by Gordon T. Williams, *Industrial Heating*, vol. 6, No. 10, October, 1939, pp. 880-882, 884-886, 888-894, 956-957. This is the first of a series of three articles dealing with "Surface Hardening—Methods, Materials and Equipment." The present section of this paper, part 1, on "Case Hardening," covers the methods of surface hardening which involve chemical change in the surface, including carburizing with compound, gas and liquid; nitriding; combinations of nitrogen and carbon; liquid baths; and the furnaces used for these processes. (H.T.)

Casting

RUNNING. "Running of Thin Castings," by Guy Henon, *Foundry Trade Journal*, vol. 61, No. 1214, November 23, 1939, p. 351. This article recently appeared in an issue of *La Fonte* showing methods for pouring on end and flat. In casting on end, the author brings out the point that such a method as slow running is dangerous because it brings out a degree of hardness in the metal. Casting flat brought out many problems which the author has tried to remedy. (C.)

PHOSPHOR-BRONZE. "Phosphor-Bronze Castings of Heavy Sections," by A. Hopwood, *Foundry Trade Journal*, vol. 61, No. 1210, October 26, 1939, pp. 285-287. It is the object of this paper to describe the successful production of some bronze castings which are not difficult to mold, but which do require special production meth-

ods to obtain correct structure and soundness. This paper stresses the importance of correctly rammed molds and use of permeable sands, to resist the hydrostatic pressures, particularly when high heads are used. This is a continued article. (C.)

Cast Iron

ADDITIONS. "A Note on the Effect of the Addition of Molybdenum, Tungsten and Titanium, Together with Calcium Silicide, to Cast Iron," by J. E. Hurst, *Foundry Trade Journal*, vol. 61, No. 1209, October 19, 1939, pp. 265-266, 280. These experiments were made to study various methods of adding certain high-melting metals to cast iron. The experimenting procedure is explained and what materials were used in each one of the numerous experiments. The results described in this article refer to a method of making the additions by the use of the alloying element in conjunction with a reducing agent. (C.I.)

CASTING TEMPERATURE. "Effect of Casting Temperature on the Primary Microstructure of Cast Irons," by A. L. Norbury, *Foundry Trade Journal*, vol. 61, No. 1213, November 16, 1939, pp. 339-341. Section three of this paper deals with the effect of casting temperature and chilling on microstructure of gamma hypo-eutectic white cast iron. Under this heading the author discusses the formation of primary gamma dendrites and columnar primary gamma dendritic structure. Many photomicrographs are included with this paper. (C.I.)

CASTING TEMPERATURE. "Effect of Casting Temperature on the Primary Microstructure of Cast Irons," by A. L. Norbury, *Foundry Trade Journal*, vol. 61, No. 1214, November 23, 1939, pp. 356-358. This, the fourth part of the author's paper, deals with the effect of casting temperature and chilling on the microstructure of delta and gamma hypo-eutectic gray cast irons. The composition used is a 14 per cent silicon cast iron. He also discusses the formation of primary gamma dendrites. Part five is the theory of the solidification of iron-carbon alloys. This section gives information on the solidification of diamond and graphite and solidification of iron carbide and graphite. (C.I.)

Cupola

MELTING. "The Cupola Furnace Process of Melting," *Canada's Foundry Journal*, vol. 11, No. 10, October, 1939, pp. 8-9. Here are some facts that should be of interest to cupola men. The article gives pointers on melting rates, wind boxes and tap holes and some advice on the location of tuyeres. (F.)

MELTING. "Melting Special Cast Irons in the Cupola," *Foundry Trade Journal*, vol. 61, No. 1214, November 23, 1939, pp. 359-360. During recent years, developments have been made on the cupola that have been directed towards improved combustion of the fuel, with consequent lowering of melting costs, along with the production of good clean metal which can be tapped at higher temperatures than those formerly obtained. This report covers such items as air blast, size of coke, tuyere area and shape of tuyeres, height of charging door and other important facts relating to the operation of a cupola. (F.)

Die Casting

PRESSURE. "Pressure Die-Casting," by A. G. Thomson, *Foundry Trade Journal*, vol. 61, No. 1208, October 12, 1939, pp. 258-259. The main idea in die-casting is

to produce sound castings as cheaply and rapidly as possible, and at the same time insure long life for the dies being used. Numerous things have to be taken into consideration when working with various types of castings, and the author points out many things that are important to watch in this work. Such items as venting the dies for escaping air, recesses in dies which are apt to trap air, and many other examples, are pointed out as being dangerous in this work. (C.)

PRESSURE. "Pressure Die-Casting in Aluminum and Zinc-Base Alloys," by Arthur Street, *Aluminum and Non-Ferrous Review*, vol. 4, No. 10, September, 1939, pp. 314-317. This is a continued article on aluminum and zinc-base alloys and their limitations and possibilities of the process. Many factors are stressed by the author, but a great deal of emphasis is put on the limitations of design in pressure die-casting. Giving the advantages and disadvantages of using methods that are in practice today. Other points discussed are economic factors, weights and size of die-castings, strength and ductility at high temperatures, solution effect of the liquid metal in the mold and many other topics of interest to pressure die-casting manufacturers. (C.)

Electrolytic Manganese

PRODUCTION. "Electrolytic Manganese—A New Metallurgical Raw Material," by W. L. Hammerquist, *Steel*, vol. 105, No. 18, October 30, 1939, pp. 42-45. This new method of producing pure manganese is the result of more than 20 years of research and may result in important developments in use of manganese as an alloying element and in steel production, since behavior of electrolytic manganese is radically different. (A1.)

Heat Treatment

HEAT TREATMENT. "Heat Treatment of Aluminum Alloys," by Dr. Ing. R. Irmann, *The Metal Industry*, (London), vol. 54, No. 25, June 23, 1939, pp. 663-666. This paper describes the solution heat-treatment of aluminum casting alloys. Furnaces used in the solution heat-treatment and precipitation heat-treatment must be able to hold very uniform temperatures for long periods of time. Mechanical properties are considerably affected by the duration of the solution heat-treatment as it generally gives increased strength, hardness and elongation; while the precipitation heat-treatment causes a decrease in elongation depending on temperature and time of process. Rate of solidification was also mentioned as affecting mechanical properties; especially when the mold has a rather low temperature. Rapid solidification causes an increase in strength. The high mechanical properties obtained by heat-treatment may be lost if the castings are exposed to elevated temperatures during a long period.

Hygiene

PROCEDURE AND TESTING. "Methods of Industrial Hygiene Procedure and Testing," by G. C. Harrold, *A.S.T.M. Bulletin*, No. 99, August, 1939, pp. 19-21. This is the explanation of the thermometer-anemometer and velometer which are used to determine velocities and directions of air currents. The thermometer-anemometer is a new instrument in the air velocity field. The value of this instrument lies in the accurate results obtainable in the range from still air to 200 linear ft. per min., where the velometer becomes useful. (He.)

Ingot Molds

COOLING CONDITIONS. "Cooling Conditions in Ingot Molds," *Foundry Trade Journal*, vol. 61, No. 1213, November 16, 1939, pp. 335-336. This is a description of an investigation carried out by I. Ja. Granat and A. A. Besdeneshnych on the cooling conditions with a specially constructed circular ingot mold and with standard steelworks molds, for ingot weights up to seven tons. What effect wall thickness has on the cooling of the steel is shown in this article. (S.)

Magnesium Alloys

AIRCRAFT PARTS. "Magnesium Alloys for Aircraft Parts," by L. B. Grant, *Iron Age*, vol. 144, No. 18, November 2, 1939, pp. 37-39. This paper was presented at the National Aircraft Production meeting of the Society of Automotive Engineers, Los Angeles, Oct. 7. Manufacturing techniques in connection with magnesium alloys are not unduly difficult or complicated, but due to the fact that many production engineers have treated magnesium alloys exactly like aluminum, they have encountered a great deal of difficulty. The author states that a great deal of time and effort is being made to develop new alloys, new means of providing surface protection and methods of fabrication by both the aircraft industry and the magnesium suppliers. The present day practice is summarized in this article. (A1.)

Pig Iron

DECARBURIZATION. "Decarburization of Granulated Pig-Iron: The 'R. K.' Process," by Professor Count Bo Kalling and Ivar Rennerfelt, *Foundry Trade Journal*, vol. 61, No. 1207, October 5, 1939, pp. 231-234. The previous methods of using iron ore as an oxidizing agent had several drawbacks, therefore experiments in this process were directed towards using a gas mixture containing carbon monoxide and dioxide as an oxidizing agent. Decarburization is generally favored by an increase in temperature. At the temperature of 1000 and 1100°C. it was possible to lower the carbon 0.02 per cent if the combined pressures of carbon monoxide and dioxide are properly controlled. Decarburized granulated iron is intended to fill the need of a low-carbon material of known and constant composition and of known origin as a raw material for the manufacture of high-quality steel. The yield in the "R. K." system is higher than that of the Bessemer process, and the conversion costs for a large output would be low. There is one noticeable disadvantage and that is the material is not obtained in the molten state; however, this is counteracted because no apparatus corresponding to the mixer is required to keep the iron hot. (C.I.)

GRADING. "A Pig-Iron Grading Scheme," *Foundry Trade Journal*, vol. 61, No. 1207, October 5, 1939, pp. 227-228. These are abridged British Cast Iron Research Association recommendations for grading pig-iron. It is to help solve some of the difficulties that arise when makers and users of pig-iron want to buy a pig-iron of a certain composition or analytical specification. There are two main groups, blast furnace irons and refined irons. Under the blast furnace irons comes this group: hot blast, hematite, basic and cold blast. Under refined irons comes the one group called refined. The grading of blast furnace irons is determined primarily with respect to phosphorous and silicon contents, and secondarily, with respect to sulphur and manganese contents. All the rest of the groups are graded on the same

basis all the way down the line to the last of the group which is the grading of refined pig-iron. (C.I.)

Powder Metallurgy

COMMERCIAL APPLICATION. "Powder Metallurgy," by Dr. Carl Claus, *Industrial Heating*, vol. 6, No. 10, October, 1939, pp. 926-930, 987. This article contains the facts and commercial applications of powder metallurgy. Four groups are mentioned by the author as being products which cannot be made by any other method and they are the refractory metals, porous metal bearings, cemented hard carbides used for cutting tools, and electrical contacts. Each of these groups are discussed individually by the author. (M.)

Refractories

BONDING MORTARS. "Advantages in the Use of High Temperature Bonding Mortars," by J. A. Patterson, *The Refractories Journal*, No. 10, October, 1939, pp. 435, 437, 439. It is the object of this paper to describe briefly the important properties of high-temperature bonding mortar, and to indicate the increased service that can be expected from refractory bricks laid with it. The paper points out the requirements of a satisfactory mortar as follows: Refractoriness, constancy of volume, bonding strength (which depends almost entirely upon the condition of its use), no reaction between mortar and brick except to produce a strong bond and working properties of the mortar. Factors to be considered in the selection of mortars are not given serious consideration and many troubles result from this oversight. Two groups are mentioned in the high-temperature bonding mortars—the heat-setting type and the air-setting type. (R.)

Steel

CHROME STEEL. "Properties of Brazed 12 Per Cent Chrome Steel," by F. C. Kelley, *Iron Age*, vol. 144, No. 18, November 2, 1939, pp. 33-35. Brazing of stainless steel requires considerable skill. How such alloys may be brazed to give tensile strengths up to 140,000 lb. per sq. in. is described in this article. This article gives a step by step account of the process. A group of photomicrographs and charts are also shown. (S.)

HEAT RESISTING AND CORROSION. "Corrosion and Heat Resisting Steels," by W. B. Thompson, *Canadian Metals and Metallurgical Industries*, vol. 11, No. 10, October, 1939, pp. 252-254, 256. The efficiency of special high-strength, corrosion-resisting alloy steels in many of the present day fields has been shown. This paper gives properties required of such steels when put into service and their development by proper manufacturing methods. The purpose of this paper is to consider briefly certain manufacturing details of some stainless alloys, particularly from the casting view-point, keeping in mind their relationship to the industry. Considerable interest is shown in the 18-8 alloys, both austenitic and stabilized, and with molybdenum additions. (S.)

ISOTHERMAL TRANSFORMATION. "Isothermal Transformation in Steels," by Edmund S. Davenport, *Iron Age*, vol. 144, No. 18, November 2, 1939, pp. 48-53. This is an abstract of Mr. Dunn's paper, presented at the 1939 Edward De Mille Campbell Memorial Lecture, before A.S.M. Several means for following the progress of isothermal transformation are available, but the most informative is the metallographic method, since it permits an examination of the transformation process while it is going

on and, hence, the gaining of some knowledge of its mechanism and of the structure of the product. A sketch illustrating the principles of this method is shown. After many years of experience, the investigation of isothermal transformation has contributed to an improved understanding of the heat treatment of steel in at least four major ways. Influence of alloying elements on isothermal transformation is outlined by the author, but he goes into greater detail when explaining the effect of the individual elements, such as carbon, manganese, nickel, chromium and various others, on isothermal transformations. (S.)

PHOSPHORUS. "Phosphorus in Steel," by C. H. Lorig and D. E. Krause, *The Iron Age*, vol. 144, no. 16, October 19, 1939, pp. 33-37, 88. Phosphorus, long an element avoided and feared in steel, has established, within recent years, a reputation for imparting corrosion resistance and improved physical properties to mild and low-alloy steels. With the interest in low-alloy steels growing day by day, this article is timely in its approach to foundry work. (S.)

PHOSPHORUS. "Phosphorus in Steel," by C. H. Lorig and D. E. Krause, *The Iron Age*, vol. 144, no. 7, October 26, 1939, pp. 28-31. This is the second part of the author's continued article. In this section, comprehensive data are given for the effect of phosphorus additions on the corrosion and physical properties of a number of low-alloy steels. These alloys include Fe-P-Cu-Si, Fe-P-Cu-Cr-Si and various other similar steels. (S.)

CHROME STEEL. *Properties of Brazed 12 Per Cent Chrome Steel*, by F. C. Kelley, *Iron Age*, vol. 144, no. 19, November 9, 1939, pp. 34-35. This is the second part of the author's article and in this section he deals with the results of impact, shear and fatigue tests on the brazed joints, and explains the high tensile strength of the joints. (S.)

SERVICE. "Steels for High-Temperature Service and Their Testing," by A. E. White, *A.S.T.M. Bulletin*, no. 100, October, 1939, pp. 15-20. Steels for high-temperature service may be divided into three groups (1) plain carbon, (2) low-alloy and (3) austenitic. The author, in this article, confines his topic to the tests of determining the short-time high-temperature properties of steel, tension creep tests, stress rupture tests and tests for surface stability. (S.)

FLAME HARDENING. "Flame Hardening—Applied to Large Forged Steel Lathe Spools," *Product Engineering*, vol. 10, no. 9, September, 1939, pp. 382-384. Surface hardening of large forged steel cylindrical parts by means of the oxy-acetylene flame process was recently accomplished by the engineers of the Westinghouse Electric & Manufacturing Co. The pieces hardened were lathe driving head spools and revolving rest bearings. The pieces after forging and machining weighed approximately 22,000 pounds. The bearing surfaces required a Brinell hardness of 350 to 500. The spools were mounted on a spider mandrel and placed in a large swing lathe, operated at low speed. Tip of the blue cone of a neutral flame was one-eighth of an inch from work and temperature under working flame was from 1500 to 1550°F. (H.T.)

FOUNDRY PRACTICE. "Notes on Steel Foundry Practice," by S. Leetch, *Foundry Trade Journal*, vol. 61, no. 1204, September 14, 1939, pp. 182-183. This paper was presented before a branch of the Institute of British Foundrymen and is a continued

article. This is a study of foundry conditions and operations in a steel foundry; this article pays attention to the use of sands—their advantages and disadvantages. Oil sand practice is used and found to be highly successful but rather expensive and not used very often. Reclaimed sand is made strong enough to be used for backing purposes and all operations used to make it usable are described. Green sand practice is also used in this foundry, but one of the weaknesses of this sand was found to be the burning on of the sand adjacent to the runner. (S.)

GEARS. "Industrial Gears for Large Transmissions," by E. J. Wellauer, *Metal Progress*, vol. 36, no. 6, December 1939, pp. 725-730, 778. In this article, the author makes a comparison between various metals used for large gears. He points out that the use of cast iron as a gear material is limited because there is not sufficient knowledge about the properties which are claimed to make it a material for large gears. Steels, both plain carbon and alloyed, either forged or cast, make good gear materials but the method of fabrication used often is limited because of gear size. The author points out that the success of cast gears is dependent upon close cooperation between the designer and the foundry. He explains some of the points which must be considered from the foundry standpoint which influence the engineer in his choice of method of fabrication. The author gives several cast gear steels, comments on the proper heat treatment of large gears and remarks that centrifugal casting may open a new method of fabrication, provided certain difficulties can be overcome.

Steel, Open Hearth

REFINING. "Refining of Metal in the Basic Open Hearth Furnace," by W. B. Lawrie, *Blast Furnace and Steel Plant*, vol. 27, no. 9, September, 1939, pp. 943-946. This is the second part of this paper that was presented at the May, 1939, meeting of the British Iron and Steel Institute. Charges worked without the addition of fluorspar are considered and it was noted that such charges seem to show merely a decrease in the manganese content of the metal towards the end. A typical charge showing this loss from start to finish is given in Table 3 and Fig. 1. The effect of fluorspar when added to the charge gives greater fluidity to the slag, and enables it to carry additional lime. Very interesting and valuable tabular matter can be found in this article, which the author uses to stress his various ideas. This is a continued article and will be carried into the next issue of this magazine. (F.)

Book Review

Engineering Physical Metallurgy, by Robert H. Heyer, 6x9, cloth bound, 549 pp., 253 illustrations, 70 tables, published by D. Van Nostrand Co., Inc., 250 Fourth Ave., New York, N. Y. Price \$4.50.

According to the preface, this book is designed to aid those making their first acquaintance with engineering metals and alloys. The author is metallurgist, research laboratories, The Amer-

ican Rolling Mill Co., and is a former instructor in Metallurgy, Purdue University, Lafayette, Ind. The reviewer would call attention to a paragraph in the preface which emphasizes the endeavor the American Foundrymen's Association has been making to promote cooperation between designer and foundryman: "The successful application of a new or improved alloy is not always a simple replacement operation. A modified or an entirely new design may be necessary to effect the greatest gain in utility, lowered cost or improved appearance of the product. Furthermore, modification or complete change of the fabricating procedure may be required. In other cases it is necessary to adapt an alloy to the fabricating or service conditions at hand; hence alloys with "tailor-made" properties to meet the specifications of designers may be required. Under these conditions the need for cooperation of engineering and metallurgical personnel is quite evident."

In this book, the author has made an effort to condense, correlate and bring up to date the various materials, methods, and concepts of metals technology for the instruction of non-metallurgical students. In sequence, the author discusses pure metals, principles of alloying, white metals and their bearing alloys, light alloys, die castings, copper and its alloys, iron and carbon steels, heat treatment of steels, low and medium alloy steels, surface heat treatment of steel, steel castings, welding, cast iron, high alloy steels, and tool steels.

A feature of the book is the extended bibliography at the end of each chapter for use of those interested in more extensive information on specific subjects.

The author seems to have accomplished the goal he set for this book. While technical in content, he has approached his subject in a manner which makes the book interesting and readable. For persons interested in an introduction to the more highly technical phases of metallurgy, this book seems to recommend itself.

FUNDAMENTAL FOUNDRY INFORMATION

A Partial List of Available A. F. A. Publications

Publication No. 7

Alloy Cast Irons. 200 pp. 6x9, cloth binding (1939). Price \$3.00. To members \$1.50.

A committee publication, designed to provide foundrymen, purchasers and potential users with comprehensive and authoritative information on the theory, applications, properties and production of alloy cast irons. Sections deal with (1) Metallurgical Theory of Effects of Alloying Elements, (2) Qualitative Effects of Alloys, (3) Quantitative Effects on Properties, (4) White and Chilled Alloy Irons, (5) Heat Treatment, (6) Foundry Practice, (7) Specific Applications, giving analysis, mechanical properties and service results of a wide variety of alloy cast irons used in commercial practice, and (8) Bibliography.

Publication No. 50

The Microscope in Elementary Cast Iron Metallurgy. by R. M. Allen.

143 pp. 6x9 preprint, 73 illustrations, (1939). Cloth binding. Price \$3.00. To members \$1.50.

A book containing material of lectures presented by the author before 1939 A.F.A. Convention. Designed to meet the needs of the shop man and student in understanding the microstructure of cast iron. Discusses the fundamentals of physical cast iron metallurgy, showing extensive illustration of various types of structures. Outlines effect of forms of graphite, silicon, sulphur, manganese and phosphorus. A chapter is devoted to special cast irons such as white, chilled, malleable, alloy, special duty and heat treated. The chapter on the cast iron equilibrium diagram is easily understood. A major section is a detailed explanation of the microscope and technique of its use, together with the preparations of samples.

Publication No. 22

Testing and Grading Foundry Sands and Clays

208 pp., 6x9, (1938, Fourth Edition). Cloth Binding. Price \$4.00. Member's price \$2.00.

Standards and tentative standards for testing and grading foundry sands and clays adopted by the A.F.A., as prepared by the Committee on Foundry Sand Research. Covers sampling, test methods for permeability, strength, fineness, mold hardness, dye absorption, sintering, core properties, methods for chemical analyses, and grading classifications. Equipment described.

Publication No. 39-11

Symposium on Steel Melting Practice.

84 pp. 6x9 preprint (1939). Heavy paper binding. Price \$1.00. To members \$0.50.

A compilation of six papers presented before the 1939 Convention, covering melting practices in the acid and basic open-hearth, acid and basic electric furnaces, the induction furnace and the converter shops. The

basic open-hearth practice is treated by J. W. Porter, American Steel Foundries, the acid open-hearth by W. C. Harris, Birdsboro Steel Foundry & Machine Co., the basic electric furnace by C. W. Briggs, Steel Founders' Society of America, the acid electric furnace by W. Finster, Reading Steel Castings Div., American Chain & Cable Co., and the induction furnace practice by G. F. Landgraf, Lebanon Steel Foundry. This is the first comprehensive survey of Steel Melting Practices in many years and gives much valuable information to anyone interested in this subject.

Publication No. 37-35

The Influence of Design on the Stress Resistance of Steel Castings, by R. A. Bull.

Heavy paper binding, 62 pp., 6x9, 22 illustrations, (1937). Price \$0.50. To members \$0.35.

A report prepared under direction of A.F.A. Steel Division Committee. Containing assembled data for the guidance of those who use and manufacture steel castings.

Publication No. 34

Symposium on Malleable Iron Castings

122 pp. 6x9 (1931), Heavy Paper Binding. Price \$0.75.

The importance of malleable iron as a material of engineering emphasizes the need of accurate, reliable information upon its manufacture, its properties and other facts of value to the user of the material. This Symposium is published jointly by A.F.A. and A.S.T.M.

Publication No. 37

Recommended Practice for Sand Cast High Lead Bronzes. Committee Report.

14 pp. 6x9 (1938). Price \$0.60. To members \$0.30.

This report is limited to sand cast high lead bronzes and is divided as follows: (1) Molding, (2) Melting and pouring, (3) Finishing, (4) Heat treatment, (5) Defects, their cause and prevention, (6) Chemical control limits, (7) Typical Properties of sand castings, (8) Conforming specifications, and (9) Development and field of use.

Publication No. 36-26

Present Status of Foundry Sand Investigation and Control, by W. G. Reichert, (1935).

Price \$1.00. Member's price \$0.50.

This is a complete review of foundry sand control by a metallurgist who has established sand control in his plant on practical, economical basis. A publication which everyone connected in any way with the use of sands should have in his handy reference file. It shows how testing and grading methods should be applied, the essentials of sand control for molding and core rooms, the laboratory and the superintendent's office. Written in understandable style for the practical shop man, yet is of the greatest value to the foundry engineer.